FIFTEENTH ANNUAL REPORT

1985 - 86

BOARD OF MANAGEMENT

Chairman

Vice-Chancellor
Dr. V. Rajagopalan

Members

Commissioner & Secretary
to Government

a) Agriculture Department
Thiru A. Venkatraman, IAS

b) Finance Department
Thiru C. Ramachandran, IAS

Director of Agriculture
Thiru K. Malaiswamy, IAS
(upto 16.5.85)
Thiru N. Athimoolam, IAS
(from 17.5.85)

Director of Fisheries
Thiru T. P. Nagarajan, IAS
(upto 19.5.85)
Tmt. Santha Sheela Nayer, IAS
(from 20.5.85 to 10.9.85)
Thiru L. K. Tripathy, IAS
(from 11.9.85)

Director of Animal Husbandry
Dr. S. Rangaraj

Chief Conservator of Forests
Thiru S. Kondas, IFS

Agricultural Scientist
Thiru A. Subramanian
(upto 26.7.85)
Dr. C. R. Muthukrishnan
(from 16.8.85)

Crop Farmer
Thiru A. D. Jeyam Pandian

Livestock Farmer
Thiru T. Ramachandran
(upto 26.7.85)
Thiru A. Thisaimani
(from 16.8.85)

Nominee for Agro-Industries
Thiru K. Liakath Alikhan
in the capacity as Chairman,
Tamil Nadu Agro-Industries
Corporation Limited

Woman Social Worker
Tmt. E. V. K. Sulochana Sampath
(upto 26.7.85)
Tmt. Rani Ganesh
(from 16.8.85)

Educationist
Thiru K. Mohanarangam
(upto 26.7.85)
Thiru M. Abdul Rahim
(from 16.8.85)

Nominee of ICAR
Dr. K. Mohan Naidu
Director, Sugarcane Breeding Institute
(upto 28.7.85)
Dr. C. Natarajan
Assistant Director General
ICAR, New Delhi
(from 29.7.85)

Member of Legislative Assembly
Thiru P. Anbalagan, M.L.A.,
(from 24.6.85)

Member of Legislative Council
Dr T. R. Janarthanan, M. L. C.

Member - Secretary

Registrar
Dr. N. Shanmugam

TAMIL NADU
AGRICULTURAL UNIVERSITY

FIFTEENTH ANNUAL REPORT

April 1, 1985 to March 31, 1986

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1. INTRODUCTION

The *Fifteenth Annual Report* of Tamil Nadu Agricultural University covers the period from 1.4.1985 to 31.3.86. Significant achievements were made during the year in the fields of agricultural education, research and extension education. During the year sixteen new varieties of crops were released for general cultivation. A number of new production techniques were developed in the faculties of agriculture, horticulture, agricultural engineering, veterinary and animal sciences and fishery science. Socio-economic studies covering agricultural marketing, cost of production of crops, yield gap analysis, irrigation management, technology adoption etc, were also undertaken. The research approach continued to be a multidisciplinary one with focus on solving the field problems identified and discussed in the various forums of the University such as Research Council, Regional Research Councils, Scientific Workers' Conference and Crop Scientists' discussions and also the problems referred to the University by the development departments of Agriculture, Horticulture and Oilseeds and at the District Technical Committees constituted for different districts of the State. The research findings of the University were effectively disseminated by the extension education net work comprising Krishi Vigyan Kendras, Communication Centres and Plant Clinic Centres of the University. Field days, farmers' day and training programmes were also organised to discuss about the latest research findings. They are effectively disseminated through mass media like radio, television, newspapers and popular farm magazines. New areas of research such as integrated-nutrient management, integrated pest control, farming systems research, bio-technology, environment science and tissue culture techniques were given importance.

The major research achievement of the University in the fields of education, research and extension education are briefly summarised in this report.

Education

* The second Veterinary College was established at Namakkal, Salem district

* A new degree programme of B.Sc. (Forestry) was started in Coimbatore campus

* The following new courses were started :-
  i) M.V.Sc. in Dairy Technology
  ii) M.V.Sc. in Dairy Chemistry
  iii) M.V.Sc. in Dairy Extension

* Infrastructural facilities at the Agricultural College, Killikulam were strengthened.

* The instrumentation cell of the University was expanded.

Fellowships

ICAR Junior and Senior Fellowships numbering 158, seven Post Matric scholarships and 157 ICAR-GOI Merit-cum-Means scholarships were received.

Research

The following new schemes were implemented during the year :-

1. Studies on the effects of sea water intrusion and inundation on soil plant characteristics, Aduthurai
2. Survival and effectiveness of rhizobial inoculants in rice-fallow pulses, Madurai
3. Evaluation of on-farm water management work in Cauvery delta, Aduthurai
4. Survey of production and marketting of horsegram in Tamil Nadu, Paiyur
5. Standardisation of developed biogas plant components and enriched process techniques for more gas output, Coimbatore
6. Creation of a Professorial Chair in the Department of Agronomy, Coimbatore under the institution of an Endowment of M/S. IFFCO
7. Creation of a Professorial Chair in the Department of Soil Science, Coimbtore under the institution of an Endowment of M/S. SPIC.
8. Studies on mass rearing of parasite, *Plastygaster sp.* and its utility in rice gall midge management, Madurai
9. All India Coordinated research project on productive efficiency of Khaki campbell ducks, desi ducks, and their crosses for egg production, Madras
10. Scheme for processing animal agricultural wastes (animal intestine) for the production of sports guts and livestock feed management Madras
11. Evolving broiler rabbits, Sandynallah
12. Strengthening of seed production programmes at Tindivanam and Vridhachalam
13. Commercial exploitation of heterosis in rice, Coimbatore
14. Biological control of crop pests, Coimbatore
15. Strengthening of radiation research, Coimbatore
16. Studies on epidemiology and integrated management on rice blast disease, Coimbatore
17. Scheme for studies on rumen physiology, Madras
18. Nutrient chemistry in Tamil Nadu Coastal Water, Tuticorin
19. Preparation of certain smoke cured fishes, Tuticorin
20. Scheme for self employment of rural women in apiculture and production of bio-control agents, Coimbatore
21. Scheme for research on *Coleus forskholii* at Coimbatore

* As on date, there are 38 ICAR Co-ordinated Research Projects, 40 ICAR adhoc projects, eight sub-project under NARP, 16 Government of India projects, 97 plan schemes and 19 schemes supported by other agencies functioning in the various faculties and research centres of the University

* The concerted efforts of the University have resulted in the release of the following 16 new varieties of crops :

Rice	:	ASD 16 White ponni
Sorghum	:	CO 26
Cumbu	:	CO 7
Panivaragu	:	CO 3
Bengalgram	:	CO 3
Redgram	:	BSR 1
Groundnut	:	VRI 1
Sunflower	:	CO 2
Sugarcane	:	COSI 86071
Fodder Cowpea	:	CO 5
Fodder sorghum	:	CO 7
Turmeric	:	BSR 1
Snakegourd	:	CO 2
Papaya	:	CO 6
Marigold	:	MDU 1

Besides the release of new varieties, the following important new technologies were developed during 1985-86 :

* Neem leaf could be used in the place of neem cake as a nitrification inhibitor to increas N use efficiency in low-land rice.

* For direct sown upland rice, application of 50 kg N/ha as top dressing on 45-60 DAS recorded higher yield than split application of the same dose as basal and top dressing.

* In Cauvery Delta the soil available N of 424 kg/ha and leaf N of 2.14% at tillering phase for Samba and Thaladi were found optimum to get 5 tonnes/ha.

* Crop sequence of maize + cowpea followed by wheat and coriander is economical in garden lands of Coimbatore district, where cotton cultivation is uneconomical.

* Spraying neem oil (1 or 2%) or neem seed extract (5 or 10 g lit) on 90 DAT was effective in reducing the earhead bug infestation in rice.

* In ragi, inoculation of azospirillum and VA mycorrhizae significantly increased the grain yield.

* Treatment of blackgram seeds with *Bacillus subtilis* reduced pre and post-emergence mortality caused by the pathogen *Macrophomina phaseoline*.

* Soaking tomato seeds with IAA (100 ppm) and potassium nitrate (2%) for 16 hours and 48 hours respectively increased germination percentage and seedling vigour. Chlorocholine chloride (CCC) at 100 ppm recorded good percentage of germination and seedling vigour in brinjal.

* Placing 50-60 mg of bavistin in the form of capsule in banana rhizome through a newly developed metallic applicator checks the growth of the fungus causing Panama wilt.

* Pungam seed powder at 400 g/vine at the time of pruning reduced grapevine root-knot nematode population and increase the yield of bunches.

* Significant control of acid lime canker was observed by spraying Agrimycin 10 ppm with 0.1% copper oxychloride thrice at monthly intervals.

* Planting two seedlings/hill enhanced the yield by 37% in *Casuarina equisetifolia*.

* Irrigating low land rice once in four days to a depth of 5 cm saves 150 mm of water without affecting yield in Lower Bhavani Project command area.

* Sixty nine per cent of the farmers alone were aware of the regulated markets but only 10 per cent utilise the service of the regulated market for disposing off the farm produce. Provision of sufficient infrastructural facilities by the co-operative marketing societies to the regulated market will improve the arrivals of produces from the farmers.

* Fifty per cent of the consumer respondents were aware of the ' Agmark ' products. There existed a wide gap between awareness and adoption among rural and urban households. Lack of communication facilities, inadequate check sampling at the retail points, lack of pragmatic grading methods, high taxes on tinned products and comparatively high price associated with the graded products were the problems identified.

* In Periyar-Vaigai irrigation system, the water distribution in head reaches and tail ends differed greatly. The farmers in head reaches were able to take two crops even in years of water scarcity. Estimated water production function for different reaches had shown that the additional flow of one cm of water at the middle and tail ends would contribute to an estimated yield of 14.20 kg and 6.00 kg respectively.

* Marketing cost of tomato per quintal was found to be Rs. 12.50 in Dharmapuri district. It included Rs. 5.50 for preparation to the market (44.00%), Rs. 3.66 for transport (29.28%) and Rs. 3.34 for market fee (26.72%).

* Seed-cum-fertilizer attachment to gorru developed by the University was found to cover 2.0 ha/day in sowing maize, groundnut, cholam, cowpea and bengalgram. There was a saving of 50% in sowing expenditure when compared to conventional method.

* A horizontal type extrusion briquetting machine developed has a capacity to make 125 kg/hour of hollow cylindrical briquettes from agricultural wastes like coir pith, rice husk and biogas digested slurry.

* Nitrogen loss in paddy soil was found to Increase in both *Kuruvai* and *Thaladi* crop with increasing depth of water in paddy field.

* For coconut, five to seven litres of water/day/tree during first year and 8-12 l/day/tree during second year were found optimum through drip

irrigation. The water requiremnet for mango, sapota and guava was five l/day/tree during *first year* and eightl /day per tree during second year.

* The larval length, cocoon weight, shell weight and silk weight were maximum among the silk worms fed with the leaves treated with 50ppm level serine daily once from 4-6 days in V stage.

* Among different methods for paddy straw mushroom cultivation, the hollow bed method recorded a maximum yield with 18.7% bio-efficiency followed by standard bed and out door methods.

* Feeding Aflatoxin induced hepatitis in calves

* Rhinosporidiosis, a chronic infection of the nasal cavity characterised by polypoid growth was identified as endemic in Madurai, Ramanathapuram, Thanjavur, Tirunelveli and Kanyakumari districts. Among the affected cattle, 95% were bullocks of above four years of age.

* The abdominal radiography technique to diagnose abdominal disorders in bovines was standardised

* Pig manure could be incorporated in growing calf ration upto 20% level without any deleterious effect

* Stud mating in sheep could be adopted for controlling the mating by using selected rams with improved fertility.

* The brackishwater environment at Pullavali was found to be suitable *for the cultivation of edible oyster* species, *Crassostrea mearascueis*.

Transfer of Technology

The Directorate of Extension Education is responsible for the effective dissemination of the advanced technologies developed by the Scientists of the University. The achievements in the field of extension education are summarised hereunder :

* The training unit of the Directorate of Extension Education organised 45 training programmes on the following 15 major topics benefiting 992 extension personnel of T & V system.

Agro-climatology, Pest surveillance Bio-fertilizers, Farm forestry, Weed management, Dry farming, Water Management, Seed Technology, Agronomy of rice, Agronomy of millets, Agronomy of pulses, Agronomy of oilseeds, Agronomy of cotton, Agronomy in horticulture, Forage crops

* The extension centres such as Krishi Vigyan Kendras, Plant Clinic Centres, Lab to Land programme centres, National Demonstration scheme and Communication Centres organised 567 training programmes benefitting 12,500 farmers, 2000 farm women, 1830 extension workers, 120 youths and 145 artisans.

* Demonstrations numbering 450, covering various aspects of agricultural and horticultural techniques and improved implements and

machinery were conducted during the year.

* The various extension centres rendered 1200 farm advisory services
* Two hundred and twenty seven radio programmes were broadcast and 70 TV programmes were telecast in 1985-86.
* Under the Farm School on AIR programme, courses on paddy cultivation, animal husbandry, integrated weed management and dry farming were offered
* Correspondence courses were conducted on pulses, sericulture, dairying and agricultural implements and machinery
* Under phase III of the Lab to Land programme 3500 families comprising of small and marginal and landless agricultural labourers were adopted by the University
* Under the breeder seed programme about 110 tonnes of seeds of paddy millets, pulses, oilseeds and vegetables were produced and distributed.
* The Livestock and Poultry Research and Development Centres actively engaged in diagnosing diseases and giving treatment, pregnancy tests, vaccination and establishment of dairy and poultry units etc.

Focus for 1986 - 87

* Establishing an Institute of Distant Education.
* Creation of a separate publication section to bring out regularly university publications of a high order.
* Establishment of a College of Forestry in the University.
* Strengthening of infrastructure facilities in the Agricultural College at Killikulam and Veterinary College at Namakkal.
* TV Extension Education Programmes (Provision of equipments).
* Organisational performances of rural financing in the context of changing structures of rural credit-region-wise analysis, Coimbatore.
* Studies on soil pedology and resource utilization, Coimbatore.
* Research on pesticide application techniques, Coimbatore.
* Exploitation of heterosis in Redgram Vamban.
* Strengthening of Communication Centres at Coimbatore and Madurai.
* Expansion of the Department of Farm Machinery. Coimbatore.
* Improving Extension linkage in Agricultural Research Stations.
* Research on afforestation of saline soil in Tamilnadu, Trichy.
* Effect of Plane of nutrition in relation to reproduction and lactation in goats, Madras.
* Certification of products for export and Microbiological evaluation, Madras.
* Integrated Breeding programme for the improvement of cross bred heads at Livestock Research Station and Dairy unit at Coimbatore.
* Diagnosis and control of contagious and infectious diseases of ducks, Madras.
* Mercury pollution in Tamil Nadu coastal waters, Tuticorin.
* Storage characteristics and shelf study of freeze dried fish, Tuticorin.

2. UNIVERSITY ADMINISTRATION

OFFICERS OF THE UNIVERSITY

Chancellor	:	Thiru S. L. Khurana His Excellency, the Governor of Tamil Nadu
Pro-Chancellor	:	Dr. K. Kalimuthu Hon'ble Minister for Agriculture
Vice-Chancellor	:	Dr. V. Rajagopalan
Registrar	:	Dr. N. Shanmugam
Comptroller	:	Thiru G. Prabhakaran Nair
Dean, Agricultural College and Research Institute, Coimbatore	:	Dr. K. R. Ramaswamy
Dean, Agricultural College & Research Institute, Madurai	:	Dr, T. Kumaraswami
Dean, Madras Veterinary College, Madras	:	Dr. P. Kothandaraman
Dean, College of Agricultural Engineering, Coimbatore	:	Dr. V. Subramaniyan
Dean, Faculty of Horticulture Coimbatore	:	Dr. S. Muthuswami (upto 30-6-85) Dr. K. R. Ramaswamy (Additional charge from 1-7-85)
Dean, Post-graduate Studies, Coimbatore	:	Dr. V. D. Guruswamy Raja
Dean, Fisheries College, Tuticorin	:	Dr. G. Jegatheesan (Additional Charge)

Dean, Agricultural College, Killikulam	:	Dr. T. K. Kandaswamy
Director of Research (Agri), Coimbatore	:	Dr. M. Balasubramanian
Director of Extension Education Coimbatore	:	Dr. S. R. Sree Rangasamy (Additional charge)
Director, School of Genetics, Coimbatore	:	Dr. S. R. Sree Rangasamy
Director, Centre for Agricultural and Rural Development Studies, Coimbatore	:	Dr. A. Kandaswamy
Director of Research (Animal Sciences), Madras	:	Dr. S. Venkatayan
Director, Institute of Animal Nutrition, Livestock Research Station, Kattupakkam	:	Dr. S. Venkatayan (Additional charge)
Director of Animal Health, Tiruchirapalli	:	Dr. S. M. Thangaraj
Director, Centre for Plant Protection Studies, Coimbatore	:	Dr. S. Jayaraj
Director, Centre for Soil and Crop Management Studies, Coimbatore	:	Dr. S. Subramanian
Director, Water Technology Centre, Coimbatore	:	Prof. R. K. Sivanappan
Director, Tamil Nadu Rice Research Institute, Aduthurai	:	Dr. S. Chelliah
Estate Officer, Coimbatore	:	Engineer A. Rathinasabapathy

BOARD OF MANAGEMENT

Chairman

Vice-Chancellor	:	Dr. V. Rajagopalan

Members

Commissioner and Secretary to Government		
a) Agriculture Department	:	Thiru A. Venkatraman, IAS
b) Finance Department	:	Thiru C. Ramachandran, IAS
Director of Agriculture	:	Thiru K. Malaiswamy, IAS (upto 16.5.85)
		Thiru N. Athimoolam, IAS (from 17.5.85)
Director of Fisheries	:	Thiru T. P. Nagarajan, IAS (upto 19.5.85)
		Tmt. Santha Sheela Nayer, IAS (from 20.5.85 to 10.9.85)
		Thiru L. K. Tripathy, IAS (from 11.9.85)
Director of Animal Husbandry	:	Dr. S. Rangaraj
Chief Conservator of Forests	:	Thiru S. Kondas, IFS
Agricultural Scientist	:	Thiru A. Subramaniam (upto 26.7.85)
		Dr. C. R. Muthukrishnan (from 16.8.85)
Crop Farmer	:	Thiru A. D. Jeyam Pandian
Livestock Farmer	:	Thiru T. Ramachandran (upto 26.7.85)
		Thiru A. Thisaimani (from 16.8.85)

Nominee for Agro-Industries	:	Thiru K. Liakath Alikhan *in the capacity as Chairman,* Tamil Nadu Agro-Industries *Corporation Limited.*
Woman Social Worker	:	Tmt. E. V. K. Sulochana Sampath (upto 26.7.85) Tmt. Rani Ganesh (from 16.8.85)
Educationist	:	Thiru K. Mohanarangam (upto 26.7.85) Thiru M. Abdul Rahim (from 16.8.85)
Nominee of ICAR	:	Dr. K. Mohan Naidu Director, Sugarcane Breeding Institute, (upto 28.7.85) Dr. C. Natarajan, Assistant Director General ICAR, New Delhi (from 29.7.85)
Member of Legislative Assembly	:	Thiru P. Anbalagan, MLA (from 24.6.85)
Member of Legislative Council	:	Dr. T. R. Janarthanan, MLC

Member - Secretary

Registrar	:	Dr. N. Shanmugam

Meetings of the Board of Management

The Board of Management met five times during the year on 6th April, 22nd July, 6th October, 27th November 1985 and 27th March 1986 and approved the following

I. Approval for sanction of the following Schemes

1. *Scheme for training women in* enterprise management to encourage their participation in rural development financed by the Ford Foundation, New Delhi.

2. Scheme for self employment of rural women in agriculture and Production of bio-control agents at the department of Agrl. Entomology, Coimbatore financed by the Ford Foundation, New Delhi.

3. Schemes financed by Indian Council of Agrl. Research, both fully and party, during 1985-86.

4. Scheme financed by ICAR on Lab-to-Land programme (Phase III) at various stations in Tamil Nadu.

5. Project on Western Ghats Development Schemes - Environmental education and awareness in the Western Ghats Region.

6. Project on survey on identification of location of specific environmental problems in the Nilgiris range.

7. ICAR Scheme for the establishment of a Krishi Vigyan Kendra at the Livestock Research Station, Kattupakkam.

8. Government of India Scheme for the establishment of a rice processing and allied equipment testing centre at the College of Agricultural Engineering, Coimbatore.

9. Endowment for the creation of a Chair in Fertilizer use and Management in the department of Agronomy Coimbatore, financed by the Indian Farmers' Fertilizer Co-operatives Limited, New Delhi.

10. Endowment for the creation of a Chair in undertaking experiments on fertiliser use in the Centre for Soil and Crop Management Studies, Coimbatore, financed by Southern Petrochemical Industries Corporation Ltd., Madras.

11. Scheme for Research on *Coleus forskholii* financed by M/s. Hoechest India Limited, Bombay.

12. Scheme for a study on rural levels of living, nutritional status, energy use pattern and their demographic determinants financed by ICAR.

13. Scheme for production of breeder seeds of various oilseed crops in the Tamil Nadu Agrl. University.

14. PL. 480 scheme on fate and efficiency of urea based fertilizer in India-Bench mark studies.

15. ICAR Adhoc Scheme on increasing income and employment through optimal farm Planning and identification of farm constraints.

16. Implementation of the scheme for evaluation of on-farm management at Cauvery delta, sanctioned by Government of India.

17. Scheme to study the effect of sea-water intrusion and inundation.

18. IDRC scheme for conducting survey on the production and utilisation of horsegram at Regional Research Station, Paiyur.

19. Scheme for mineral status of plant and animal and its relation to the incidence of haematuria in hill cattle at Madras Veterinary College.

20. ICAR scheme on processing of animal wastes and animal intestines for the production of sports guts, cat guts and livestock feed supplement.

21. ICAR scheme - All India Coordinated research project on production efficiency of Khaki Campbell ducks, desi ducks and their crosses for egg production.

22. ICAR Scheme for evolving broiler rabbits at Sheep Breeding Research Station, Sandynallah.

23. Krishi Vigyan Kendra at Regional Research Station, Vridhachalam.

24. Strengthening of the Instrumentation cell in the University.

25. Govt. of India scheme on standardisation of developed biogas plant components and enriched process techniques for more gas output.

II. Approval of the following items connected with education

1. Institution of an Endowment in Honour of Hon'ble Sardar Buta Singh Union Minister for Agriculture, the Chief Guest of the Eleventh Annual Convocation of the University.

2. Admission of eight Sri Lankan students.

3. Proposal on conduct of Entrance Test Examination by the University for admission to professional colleges for 1986-87.

4. Proposal for agricultural College at Pondicherry as a constituent college of the University.

5. Increasing the admission strength in Doctoral and Masters degree programmes for 1985-86.

6. Starting a degree programme in Forestry at Agrl. College and Research Institute, Coimbatore from 1985-86.

III. Approval of the following items connected with administration

1. Thirteenth and fourteenth Annual reports of the University for the years 1983-84 and 1984-85.

2. Appointment of certain University Officers in the University during 1985-86.

3. Appointment of the Accounts Officer in Agrl. College and Research Institute, Madurai.

4. Appointment of part time medical officers in certain out-stations of the University.

5. Appointment of special staff for land acquisition for establishment of Veterinary College and Research Institute, Namakkal.

6. Delegation of powers to the Vice-Chancellor for the creation of posts both in teaching and non-teaching categories, with an initial basic pay of Rs. 1340/- p. m.

7. Creation of the computer centre at AC & RI, Coimbatore.

8. Implementation of Certain Govt. orders in the University.

9. Implementation of the Government order in the University for the transferred research personnel with UGC scale of pay.

10. Establisnment of a Press at TRRI, Aduthurai.

11. Proposals for increasing monetary benefit-Delegation of powers under various items to the Vice-Chancellor.

12. Allotment of a site (75 cents) to the Telephone Department in the main campus.

13. Payment of Ex-gratia amount to the casual mazdoors who die in

harness while engaging in the farm operations.

14. Payment of deputation allowance to those persons working in TNAU on deputation from Tamil Nadu State Government.

15. Payment of project allowance to the Staff of the Agrl. College, Killikulam and Veterinary College and Research Institute, Namakkal.

16. Payment of only 50% of the existing rent in certain research stations in TNAU.

17. Implementation of granting interim relief to the teachers.

18. Payment of special pay of Rs.100/- to all Assistant Professors in the TNAU and certain Associate Professors and Professors in the Faculty of Engineering for whom Ph. D. qualification is not compulsory.

19. Report by the Sub-committee regarding the deputation of TNAU staff members with specific terms and conditions.

20. Proposal for five days a week working system to teaching and non-teaching staff in the University.

21. Recommendations of the Sub-Committee constituted on the Farm Workers Union representations of the University Main Campus.

22. Revised estimate for 1984-85 and budget estimate for 1985-86 of the University.

23. Budget estimate for 1986-87 of the University.

24. Audited annual accounts and audit report of the University for the year 1982-83.

25. The audited annual accounts of the University for 1983-84

26. The audited annual accounts for 1984-85 and annual audit report of the University for 1983-84.

27. Sanction of additional funds for the acquisition of lands at Tamil Nadu Rice Research Institute, Aduthurai.

28. Purchase of computers for Coimbatore, Madras and Madurai campuses under the ICAR Development Grant

29. Implementation of the recommendation of the Fourth Pay Commission of Tamil Nadu State Government to the Non-teaching staff of the University.

30. Draft bequeathed will of late Dr. A. Srinivasan, administered by the Administrator General, Madras for the utilisation of welfare of animals.

31. Sanction of out-station allowance instead of one advance increment for the staff working in certain research stations of the University.

32. Sanction of the interest bearing advance to the staff of the University for purchasing conveyance.

33. Draft agreement (licence) to be executed between TNAU and various committees for lease of land for Religious purpose.

34. Retransfer of paddy Processing centre to Govt. of India.

35. Acquisition of 1.34 acres of land belonging to Bhoodan Board to RRS, Vridhachalam.

Approval of the following items under capital works.

1. Rs. 6.55 lakhs towards the construction of a seed processing complex for the department of Seed Technology, Coimbatore.
2. Rs. 4.73 lakhs towards the construction of Laboratory for biological research on pulses at TNAU, Coimbatore.
3. Rs. 1.20 lakhs towards the repair charges of North House at TNAU, Coimbatore.
4. Rs. 1.20 lakhs for providing bitumanised road at Paddy Breeding station, AC&RI, Coimbatore.
5. Rs. 19.50 lakhs towards the construction of certain buildings at various out - stations and main campus.
6. Rs. 20.00 lakhs towards the construction of Home Science College and laboratory buildings at Agr. College and Research Institute, Madurai under ICAR.
7. Rs. 1.85 lakhs towards the contruction of wire mesh house at AC & RI Madurai under ICAR Development grant.
8. Rs. 16.12 lakhs towards the construction of certain buildings for the Agrl. College, Killikulam.
9. Rs. 12.60 lakhs towards the construction of four hostel blocks at the Agricultural College, Killikulam.
10. Rs. 2.08 lakhs towards the construction of dining hall cum kitchen at Agricultural College, Killikulam.
11. Rs. 1.40 lakhs towards the vehicle shed at Agricultural College, Killikulam.
12. Rs. 2.25 lakhs for completing the buildings for the departments of Microbiology, Virology and Pathology at Madras Veterinary College, Madras.
13. R . 6.00 lakhs towards the construction of an auditorium at the Fisheries College, Tuticorin.
14. Rs. 1.40 lakhs towards the construction of E-type quarters at Fisheries College, Tuticorin.
15. Rs. 7.61 lakhs towards the construction of certain buildings at various out-stations.
16. Rs. 4.96 lakhs towards the acquisition of additional lands at RRS, Paiyur.
17. Rs. 2.00 lakhs towards the construction of overhead tank at RRS, Paiyur.
18. Rs. 15.00 lakhs towards the construction of a laboratory building at the TRRI, Aduthurai under NARP.
19. Rs. 4.20 lakhs towards the construction of livestock shed and hospital complex at the Livestock Research Station, Kattupakkam.
20. Rs. 4.00 lakhs towards the construction of staff quarters at Rice Research Station, Tirur.

21. Rs. 9.99 lakhs towards the construction of staff quarters at RRS, Paiyur and Aruppukottai under NARP.

22. Rs. 11.61 lakhs towards the construction of laboratory building at RRS, Aruppukottai under NARP.

23. Rs. 6.82 lakhs towards barbed wire fence, formation of roads and water supply under NARP at RRS, Aruppukottai.

24. Rs. 1.80 lakhs for providing sanitary arrangements to the staff quarters at Oilseeds Research Station, Tindivanam.

25. Rs. 1.96 lakhs towards the construction of quarters at ARS, Palur.

26. Rs. 1.58 lakhs towards the construction of Professors' quarters at Coconut Research Station, Veppankulam.

27. Rs. 2.10 lakhs towards the construction of twin types of quarters at Sugarcane Research Station, Sirugamani.

28. Rs. 1.30 lakhs for providing fourth H. T. line at Horticultural Research Station, Periyakulam.

29. Rs. 2.20 lakhs towards the construction of Laboratory and Farm structure at Thirupathisaram.

30. Acquiring machinery of fish canning factory and fish meal plant at Tuticorin on free of cost to the TNAU.

31. Exchange of piece of land of Coconut Research Station, Veppankulam with a private party for better layout and convenience.

ACADEMIC COUNCIL

Chairman

Vice-Chancellor	:	Dr. V. Rajagopalan

Members

Commissioner and Secretary to Govt Agricultural Department	:	Thiru A. Venkataraman, IAS

Deans

Agricultural College & Research Institute Coimbatore	:	Dr. K. R. Ramaswamy
Agricultural College & Research Institute of Madurai	:	Dr. T. Kumaraswami
Agricultural College Killikulam	:	Dr. T. K. Kandaswamy
College of Agricultural Engineering Coimbatore	:	Dr. V. Subramaniyan

Madras Veterinary College Madras	:	Dr. P. Kothandaraman
Fisheries College Tuticorin	:	Dr. G. Jegatheesan (Additional Charge)
Post-Graduate studies Coimbatore	:	Dr. V. D. Guruswamy Raja
Faculty of Horticulture Coimbatore	:	Dr. S. Muthuswami (upto 30.6.85) Dr. K. R. Ramaswami (Additional charge from 1.7.85)

Directors

Director of Research (Agriculture) Coimbatore	:	Dr. M. Balasubramanian
Director of Research (Animal Sciences) Madras	:	Dr. S. Venkatayan
Director of Extension Education Coimbatore	:	Dr. S. R. Sree Rangasamy (Additional charge)
Director CARDS Coimbatore	:	Dr. A. Kandaswamy
Director School of Genetics Coimbatore	:	Dr. S. R. Sree Rangasamy
Director Water Technology Centre Coimbatore	:	Prof. R. K. Sivanappan
Director Centre for Plant Protection Studies Coimbatore	:	Dr. S. Jayaraj
Director Centre for Soil and Crop Management Studies Coimbatore	:	Dr. S. Subramanian
Director of Animal Health Tiruchirapalli	:	Dr. T. M. Thangaraj
Six members among the Heads of Departments nominated by the Vice-Chancellor	:	Dr. D. Chandrasekaran Professor and Head Department of Soil and Water Conservation Coimbatore

Dr. P. Chandrasekaran
Professor and Head
Department of Forage Crops
Coimbatore (upto 30.11.85)

Prof. N. R. Chandrasekaran
Professor and Head
Department of Forage Crops
Coimbatore (from 6.2.86)

Dr. R. Ramamurthi
Department of Meat Hygiene and Technology
Veterinary College
Madras

Dr. V. Ulaganathan
Professor and Head
Department of Animal Genetics
Veterinary College
Madras

Dr. K. G. Shanmugavelu
Professor and Head
Department of Horticulture
Agricultural College & Research Institute
Madurai

Dr. P. Natarajan
Associate Professor and Head
Department of Fish culture
Fisheries College
Tuticorin (upto 30.11.85)

Dr. K. Venkataramanujam
Associate Professor
Fisheries College
Tuticorin

Three members having special knowledge or practical experience in different aspects of agriculture nominated by the Vice-Chancellor

Prof. AR. Lakshmanan
Dean
College of Agriculture
Annamalai University
Annamalai Nagar

Dr. R. Ramaiah
Professor and Head
Department of Agricultural Economics
University of Agriculture Science
Dharwad

Prof. A. Gnanam
Vice-Chancellor
Bharathidasan University
Tiruchirapalli

Secretary

Registrar — Dr. N. Shanmugam

Meetings of the Academic Council

The Academic Council met thrice on 17.6.85, 6.10.85 and 21.3.86 during the year. The following important decisions were taken :-

1. Accepted the strengthening of breeder seed programme at Tiruvannamalai, Tiruchencode, Coonoor and Kattupakkam with a financial implication of Rs. 10.00 lakhs for 1985-86.

2. Accepted the scheme on commercial exploitation of heterosis in rice with the budget allocation of Rs. 0.50 lakh for one year.

3. Accepted the strengthening of radiation research at Coimbatore with the financial implication of Rs. 3.25 lakhs for 1985-86.

4. Accepted the proposal for the scheme on studies on epidemiology and integrated management of rice blast disease, Coimbatore with the budget provision of 1.63 lakhs for 1985-86.

5. Accepted the proposal for the scheme on biological control of crop pests at Coimbatore for one year with the financial implication of Rs. 1.67 lakhs.

6. Accepted the proposal for strengthening the communication centre at Veterinary College, Madras with a financial implication of Rs. 1.85 lakhs.

7. Accepted the proposal for the scheme for studies on rumen physiology at Madras Veterinary College with the financial implication of Rs 0.55 lakh.

8. Accepted the scheme on nutrient chemistry and proper utilisation of sewages at Tuticorin with the financial implication of Rs. 0.46 lakh.

9. Accepted for the scheme on preparation of certain smoke cured fishes at Tuticorin with the budget provision of Rs. 0.59 lakh.

10. Accepted the proposal for strengthening the Kumaraperumal Farm Science Centre, Trichy with a budget provision of 0.28 lakh and decided to create two posts of Associate Professor (one each in Agrl. Entomology and Plant Pathology).

11. Accepted the proposal for strengthening the Tamil Nadu Rice Research Institute, Aduthurai with a financial implication of Rs. 0.25 lakh.

12. Accepted the proposal for strengthening the Department of Biology at Madras Veterinary College by upgrading the post of Assistant Professor to Associate Professor with an additional financial implication of Rs. 9,000/- per year.

13. Agreed to the proposal for the creation of one post of Associate Professor (Plant Pathology) at AC & RI, Madurai.

14. Recommended to the Board of Management to consider the strengthening of Instrumentation Cell in the University with the financial implication of Rs. 17.57 lakhs for five years.

15. Accepted and recommended to the Board of Management to consider the nomination of the Director, Tamil Nadu Rice Research Institute, Aduthurai as a member of the Academic Council.

16. Accepted the proposal for strengthening the Department of Fishery Technology at Fisheries College, Tuticorin with the financial implication of about Rs. 0.30 lakh for one year.

17. Accepted the new scheme proposals under the faculty of Veterinary and Animal Sciences.

18. Approved in the principle the new scheme proposals under the faculty of Fisheries Science.

19. Accepted the proposal for strengthening and reorganising the Multicrop Experiment Station, Pattukkottai.

20. Accorded concurrence for the institution and implementation of 'State Bank of India Endowment' in the University.

21. Accepted the institution and implementation of a Chair offered by IFFCO Limited in the University.

22. Ratified the increased admission strength in the Master's degree programme of Tamil Nadu Agricultural University for the academic year 1984-85.

23. Recommended to the Board of Management the request of the State Government concerning the reservation of seats to the ex-servicemen in the B. V. Sc, B. Sc. (Hort) and B.F.Sc. degree programmes of the University.

24. Accepted the admission of Sri Lanka Tamil students in undergraduate degree programmes in the University during 1984-85.

25. Accepted the proposal for increasing the admission strength in the B.Sc. (Hort), B.V.Sc. and B.E. (Ag) degree programmes of the University.

26. Accepted the proposal for starting of the Agricultural College of Pondicherry as a constituent college of the University.

27. Accepted the increased admission in the Doctoral and Master's degree programmes of TNAU during the academic year 1984-85.

BOARD OF STUDIES

Faculty of Agriculture

Elected Members

Dr. C. Ramaswamy
Associate Professor (Agrl. Economics)
TNAU Coimbatore

Thiru N. Sivaswamy
Associate Professor (Agrl. Botany)
Agricultural College
Killikulam

Thiru M. N. Bhudhar
Assistant Professor (Agronomy)
Regional Research Station.
Paiyur

Thiru K. Ponnuswamy
Assistant Professor (Agronomy)
National Pulses Research Centre
Pudukkottai

Thiru R. Murugesan
Assistant Professor (Agrl. Microbiology)
National Pulses Research Centre
Pudukkottai

Thiru S. Ramaswamy
Assistant Professor (Agronomy)
Tamil Nadu Rice Research Institute
Aduthurai

Nominated Members

Dr. R. Ramanna
Professor and Head
Department of Agricultural Economics
University of Agrl. Sciences
GKVK Campus
Bangalore

Dr. S. Chandrasekaran
Professor and Head
Department of Soil Science
Annamalai University
Annamalai Nagar

Meetings

The Board of Studies met thrice during the year under report and recommended the following to the Acadamic Council.

1. Proposal for the creation of separate department of Environmental Sciences and revival of Post-graduate degree programmes in Environmental Biology.
2. Equivalent / alternate courses for B. Sc. (Ag) degree curriculum
3. Year-wise arrangements of courses for the B. Sc. (Home Science) programme
4. Introduction of a new course credit (0+1) for undergraduate students in the field of Physical Education like NCC and NSS in the first and second year of their study
5. Proposal on the conduct of supplementary examinations during trimester breaks
6. Restructured syllabus (1984 - 85) for the II B.Sc. (Ag) class.

7. Draft syllabi for the B.Sc. (Forestry) degree programme.

8. Approval of revised rules for the award of Thiru K. R. Nagarajan prize.

9. Proposal for allotment of credit load to Physical Education and measures for promoting sports standards in the University

10. Introduction of three letter coding system for the various courses taught in the Faculty of Agriculture

11. Fixation of norms for the conduct of two short tours and one long tour for the under-graduate courses

12. Evaluation procedure for the Village Stay Programme for students admitted in 1984-85

13. Assignment of course number and credit hours for the short tour for the II B.Sc. (Ag.) class

14. The revised syllabus for the third year B.Sc. (Ag.) class.

15. Certain courses of 1978 syllabus of B Sc .(Ag.) degree as equivalent ones to those of the courses of 1981 syllabus

16. Additional courses in Mathematics for B. Sc. (Forestry) degree programe

17) Draft syllabus for the M.Sc. degree programmes in Environmental Sciences

18. Shift of the course number 303 for the third year B.Sc. (Forestry) to IV B.Sc. (Forestry) and to renumber the same as STH. 401 and shift FOR. 405 from IV B.Sc. (Forestry) to III B. Sc. (Forestry) and assigning course No. FOR 308

Faculty of Agricultural Engineering

Elected Members

Dr. V. V. Sreenarayanan
Associate Professor
Department of Agricultural Processing
Tamil Nadu Agricultural University
Coimbatore

Thiru D. Manohar jesudas
Assistant Professor
Department of Farm Machinery
Tamil Nadu Agricultural University
Coimbatore

Thiru K. Shanmugasundaram
Assistant Professor
Department of Agricultural Engineering
Agricultural College and Research Institute
Madurai

Thiru P. Natarajan
Associate Professor
Department of Agricultural Structures
Tamil Nadu Agricultural University
Coimbatore

Thiru S. Senthilvel
Assistant Professor
Department of Soil and Water Conservation
Tamil Nadu Agricultural University
Coimbatore

Thiru V. Kumar
Assistant Professor (Agricultural Engineering)
Regional Research Station
Paiyur

Nominated members

Dr. V. V. N. Murthy
Professor and Head
Department of Soil Conservation
College of Agricultural Engineering
Punjab Agricultural University
Ludhiana

Dr. B. P. N. Singh
Professor and Head
Department of Processing and Water Conservation
G. P. Pant University
Pant Nagar

Meetings

The Board of Studies met twice during the year under report and recommended the following to the Academic Council.

1. Bridge courses for the vocational stream students
2. Permission to complete the Tamil Course during fourth year as a special case.
3. Introduction of three letter coding system
4. Modified syllabus for the M.E. (Ag.) degree programme in Water Management.
5. Equivalent courses in the restructured syllabus.

FACULTY OF VETERINARY AND ANIMAL SCIENCES

Elected members

Upto 19.1.86

1. Dr. B. M. Easwaran
Associate Professor
Animal Genetics
Madras Veterinary College
Madras

2. Dr. P. A. Balu
Associate Professor
Madras Veterinary College
Madras

3. Dr. I. John
Associate Professor
Obstetrics and Gynaecology
Madras Veterinary College
Madras

From 20.1.86

8. Dr. S. Jayasundar
Associate Professor
Pharmacology
Madras Veterinary College

9. Dr. V. Kathaperumal
Associate Professor
Animal Nutrition
Madras Veterinary College,
Madras

10. Dr. B. Neduncheralathan
Assistant Professor
Department of Obstetrics and Gynaecology
Madras Veterinary College
Madras

4. Dr. R. S. Viswanathan
Associate Professor
Livestock Production
Madras Veterinary College
Madras

5. Dr. P. Dhanabalan
Assistant Professor
Therapeutics
Madras Veterinary College
Madras

6. Dr. R. Subramaniam
Associate Professor
Extension
Madras Veterinary College
Madras

7. Dr. P. Thangaraju
Assistant Professor
Directorate of Research (A. S.)
Madras

11. Dr. K. Duraiswamy
Assistant Professor
Livestock Research Station
Kattupakkam

12. Dr. P. Dhanabalan
Assistant Professor
Clinics
Madras Veterinary College
Madras

13. Dr. R. Venkataraman
Assistant Professor
Therapeutics
Madras Veterinary College
Madras

Nominated Members

Dr. A. Rama Mohana Rao
Professor and Haed
Animal Genetics
College of Veterinary Science
Tirupathi

Dr. M. Krishnan Nair
Dean
College of Veterinary Science
Mannuthy
Tiruchur

Dr. C. V. Reddy
Dean
Faculty of Veterinary Medicine
Andhra Pradesh Agricultural University
Rajendra Nagar,
Hyderabad

Dr. A. Ramakrishnan
Director
Centre for Advance Studies (Poultry)
Kerala Agricultural University
Mannuthy
Tiruchur

Meetings

The Board of Studies met twice during the year under report and recommended the following to the Academic Council.

1. Certain changes in the restructured B. V. Sc Syllabus.

2. Implementation of Village Stay Programme in the Internship training programme.

3. Proposal to conduct two Internship programmes during a year.

4. Approval of the examination and evaluation procedure of the internees.

5. Issuing provisional certificate before the completion of Internship

6. Syllabus for the Ph. D. programme in Livestock Production and Management.

7. Starting of Post-graduate diploma course in Clinical Pathology.

8. Approval of certain changes in the arrangements of the courses made during 1984-85 in the subject of Veterinary Public Health.

Faculty of Horticulture

Elected Members

Dr. R. Subbiah
Associate Professor
Department of Horticulture
Agricultural College & Research Institute
Madurai

Thiru S. Thamburaj
Associate Professor
Faculty of Horticulture TNAU
Coimbatore

Thiru S. Natarajan
Assistant Professor
Department of Horticulture
Agricultural College & Research Institute
Madurai

Thiru D. Veeraghava Thatham
Assistant Professor (Hort)
Regional Research Station
Vridhachalam

Thiru E Vadivel
Assistant Professor
Faculty of Horticulture
Tamil Nadu Agricultural University
Coimbatore

Thiru S. Annadurai
Assistant Professor
Faculty of Horticulture
Tamil Nadu Agricultural University
Coimbatore

Nominated Member

Dr. S. N. Rao
Chairman
Andhra Pradesh Forest Development Corporation Ltd.
N. M. D. C. Buildings
6th Floor MASAB Tank
Hyderabad

Dr. P. C. Sivaraman Nair
Director of Research
Kerala Agricultural University
Vellanikkara
Tiruchur
Kerala State

Meetings

The Board of Studies met twice during the year under report and recommended the following to the Academic Council.

1. Revised syllabus for Ph. D degree programme in Horticulture.

2. Inclusion of the nematology course, viz., Nematode Diseases of Crop plants and Their Control (2 + 1) in fourth year, B. Sc (Hort).

3. Revised courses for the second year B. Sc (Hort) class.

4. Horticultural courses to the B. Sc (Forestry) degree programme.

5. The revised courses for the third and fourth year B. Sc. (Hort) degree programme.

6. The revised programme for All India tour as considered by the Board of Studies (Agri).

7. Revision of course numbers of certain Horticultural Courses offered under the B.Sc. (Ag) and B.E.(Ag) degree programmes.

Faculty of Fisheries

Elected Members

1. Thiru P. Selvaraj
   Associate Professor
   Fisheries College
   Tuticorin

2. Dr. V. Sundararaj
   Associate Professor
   Polyculture scheme
   Vedaranyam

3. Thiru Md. Kaleemur Rahman
   Assistant Professor
   Fisheries College
   Tuticorin (29.1.85 to 8.10.85)

4. Dr. S. P. Palaniappan
   Assistant Professor
   Fisheries College
   Tuticorin

5. Dr. N. Sukumaran
   Assistant Professor
   Fisheries College
   Tuticorin

6. Dr. V. Ramadass
   Assistant Professor
   Fisheries College
   Tuticorin

Nominated Members

1. Dr. C. T. Samuel
   Professor and Head
   Department of Industrial Fisheries
   Foreshore Road
   University of Cochin
   Cochin

2. Prof. R. K. Salian
   Head of Division (Fisheries Sciences) College of Fisheries
   University of Agricultural Sciences
   Bangalore

Meetings

The Board of Studies met once and recommended certain revisions and additions in the M. F. Sc. Syllabus

Recognition Committee

The Recognition Committee recommended the following to the Academic Council during 1985-86.

1. Recognition of B. Sc. (Home Sciences) offered at the Gujarat Agricultutal University as equivalent to the B. Sc. (HSC) of TNAU for the purpose of admission.

2. Recognition of the B. Sc. degree in Agricultural Economics and Extension of Kabul University, Afganistan for the purpose of admission to the masters' degree programme of TNAU under Government of India quota with the condition that corrective courses will be prescribed in deficit areas.

3. Recognition of B. Sc. (Ag) degree offered at the University of Udaipur for the purpose of admission to the M. Sc. (Ag) degree of TNAU under Government of India quota.

4. Recognition of the B. V. Sc. and Animal Health degree offered by the Assam Agricultural University for the purpose of admission to the M. V, Sc. degree programme of TNAU under Government of India quota.

Board of Examination

Board of examinations met twice during the year under report and the following decisions were taken.

1. Ratified the action taken in the appointment of question paper setters/External Examiners for the I and II Semester examination of the Diploma in Agriculture.

2. Ratified the date fixed for the commencement of II & IV Semester Examinations of the Diploma in Agriculture.

3. Ratified the action taken in the appointment of Question Paper setters/External Examiners for the II and IV Semester examinations of the Diploma in Agriculture.

4. Considered and approved the recommendation of the Standing Recognition Committee on the evaluation procedure and prescription fee for the marks sheet.

5. Reviewed and provisionally declared the results of III and IV (1983-84) batch and I and II (84-85) batch Semester Examinations of the Diploma in Agriculture.

Degree Programme and Admission

A total of 9238 application forms for the degree courses in Agriculture, Horticulture, Veterinary Sciences, Agricultural Engineering and Fisheries and 42 applications for B. Sc. (Home Science) were received. With regard to post graduate degree programmes 597 applications for master's degree programmes and 225 applications for doctoral degree programmes were received. The following were the different degree programmes in the University.

DEGREE	Subject
	Undergraduate
B. Sc. (Ag)	Agriculture
B. Sc. (Hort)	Horticulture
B. E. (Ag)	Agrl. Engineering

Veterinary	B. V. Sc
Fisheries	B. F. Sc.
Home Sciences	B. Sc. (HS)
Ph. D. & M. Sc. (Ag)	Crop Physiology
M. Sc. (Ag)	Sugarcane Production
Ph. D & M. Sc. (Ag)	Agricultural Microbiology
Ph. D & M. Sc. (Ag)	Plant Pathology
Ph. D & M. Sc. (Ag)	Agricultural Entomology
Ph. D & M. Sc. (Ag)	Seed Technology
Ph. D & M. Sc. (Ag)	Agricultural Extension
Ph. D & M. Sc. (Ag)	Agricultural Economics
Ph. D & M. Sc. (Ag)	Soil Science & Agricultural Chemistry
Ph. D & M. Sc. (Ag)	Plant Breeding and Genetics
Ph. D & M. Sc. (Ag)	Agronomy
Ph. D & M. Sc. (Ag)	Horticulture
M. Sc. (Ag)	Farming System Management
M. Sc. (Ag)	Plant Protection
M. Sc. (Ag)	Agricultural Marketing Management
M. F. Sc.	Fisheries
M. E. (Ag)	Agro Energy & Power
M. E. (Ag)	Farm Power & Machinery
M. E. (Ag)	*Soil & Water Conservation Engineering*
M. Sc.	Food Science & Nutrition

Veterinary Programmes

M. V. Sc.	Poultry Science
M. V. Sc. and Ph. D.	Veterinary Microbiology
M. V. Sc.	Therapeutics
M. V. Sc. and Ph. D.	Obstetrics and Gynaecology
M. V. Sc. and Ph. D.	Parasitology
M. V. Sc.	Veterinary Public Health and Epidemiology
M. V. Sc.	Meat Hygiene and Technology
M. V. Sc.	Dairy Microbiology
M. V. Sc.	Livestock Production and Management
M. V. Sc.	Pharmacology
M. V. Sc.	Animal Nutrition
M. V. Sc.	Animal Genetics and Breeding
M. V. Sc.	Animal Husbandry (Hygiene and Management)
M. V. Sc.	Veterinary Physiology

The candidates selected for admission to various under graduate and post graduate degree programmes were approved by the Vice-Chancellor. The first year classes were commenced on 24.10.85 for all the undergraduate programmes. The classes were commenced on 16.12.1985 for the M. Sc. (Ag), M.V.Sc., M.Sc. (Hort), M.Sc. (FS&N) and M.F.Sc.

The trimester system of education was followed in all the degree programmes offered in the University. In the case of the Diploma course on Agriculture offered by Shri Ramakrishna mission Vidhyala, semester system was followed.

During the year under report the following number of students have successfully completed their degree programme.

Name of the degree programme	No. of students completed
B.Sc. (Ag.)	183
B.Sc. (Hort.)	32
B.V.Sc.	106
B.E. (Ag.)	48
B.Sc. (Home Science)	17
M.Sc. (Ag.)	128
M.Sc. (Hort)	14
M.V.Sc.	20
M.E. (Ag.)	4
M.Sc. (FS&N)	1
Ph.D. (Ag.)	36
Ph.D. (Vety)	12
Total	601

Convocation of the University

The eleventh convocation of the University was held at Coimbatore on 7.10.86. His Excellency Thiru S. L. Khurana, Governor of Tamil Nadu, presided over the Convocation. Dr. V. Raja gopalan, Vice-Chancellor welcomed the gathering and gave a brief account of the activities of the University. Sardar Buta Singh, Honourable Minister for Agriculture and Rural Development, Government of India delivered the Convocation address. The Pro-Chancellor announced institution of the following prizes / endowments / fellowships in the University.

1. Sardar Buta Singh Medal to the best student in M.F.Sc. Course securing the highest OGPA
2. Two Hexamer Foundation Medals to the best M.Sc. (Ag) students one each in Agrl. Entomology and Plant Pathology.
3. Thiru V. Vidyasagar Prize for the best M.Sc. (Ag.) thesis in Cotton Agronomy.
4. Coromandal Indag Products prize for the M.Sc. (Ag) thesis in herbicide science of Agronomy.
5. Annual award of Dr. Ramakrishnan Prize for the best Ph. D. student in Plant Pathology.
6. An endowment in the name of SPIC for the creation of a chair in Soil Science and Agricultural Chemistry.
7. An endowment in the name of IFFCO for the creation of chair in Agronomy.

8. State Bank of India endowment for the creation of a Chair in Rural Development and Planning.

9. Madras Fertilizer Limited award of a Fellowship in the discipline of Agronomy-Plant Nutrition.

Visitors

Dr. C. Terrill, Scientist from U.S.A. visited Madras Veterinary College on April 6, 1985.

Sardar Bhuta Singh, Hon'ble union Minister for Agriculture visited Tamil Nadu Agricultural University on October 6, 1985 on the occasion of the eleventh convocation of the University.

Thiru N. Perumal, Joint Commissioner (Training) Directorate of Extension visited Tamil Nadu Agicultural University on October 8. 1985 to discuss about the training programmes, role of communication centre and future development plans.

Dr. T. S. Sohal from NDRI, Karnal and Dr. G. S. Bhatti, Director of Extension Education, Hariyana Agricultural University, Hissar visited Tamil Nadu Agricultural University on October 9, 1985.

The World Bank team comprising of Dr. Bredero. Dr. Motiraman and Dr. A. R. Seshadri visited Tamil Nadu Agricultural University for finalising the programmes of NARP Phase II on 13.12.85.

Meetings / Seminars / Events

The Farmer's Day was celebrated at Rice Research Station, Tirur on April 1, 1985. Dr. K. Kalimuthu, Hon'ble Minister for Agriculture, Dr. V. Rajagopalan, Vice-Chancellor, Tamil Nadu Agricultural University and Thiru K. Malaiswamy, IAS. Director of Agriculture participated in the celebration.,

The Scientific worker's Conference on Agriculture was held on April 11-12, 1985 at Tamil Nadu Agricultural University, Coimbatore.

The Scientific Workers' Conference on Veterinary and Animal Science was held on April 15, 1985 at Madras Veterinary College, Madras.

All India Kharif Pulses workshop was held at Tamil Nadu Agricultural University on May 17-19, 1985.

Dr. N. S. Randhawa, Director General, Indian Council of Agricultural Research laid the foundation stone for the Microbiology Laboratory and NARP Biological Research Laboratory at Tamil Nadu Agricultural University, Coimbatore on May 19, 1985.

A seminar on "Developmental Activities of Thanjavur District" was organised at Soil and Water Management Research Institute on June 2, 1985.

The summer institute on Newer Trends in Clinical Veterinary Gastro Enterology and Hepatology was held at Madras Veterinary College on June 2-22, 1985.

A two-day training programme on RTV management and plant protection in important crops was conducted on June 10-11, 1985.

A coconut seminar was organised at Pollachi in collaboration with Rotary Club of Pollachi and IOB Pollachi on June 26, 1985.

The Summer Institute on Cropping Systems Management sponsored by the ICAR was conducted at the centre for Soil and Crop Management Studies, Tamil Nadu Agricultural University, Coimbatore from First to 20th July, 1985.

The Farmers' Day was celebrated at Coconut Research Station, Veppankulam on July 6th, 1985.

State level training on Ragi and Minor millets Production Technology was conducted by the School of Genetics at Tamil Nadu Agricultural University, Coimbatore on July 9-12, 1985.

A National Workshop on Status of Agricultural Management Education in India was held at Tamil Nadu Agricultural University on July 23-25, 1985.

The Dairy Science Block at Madras Veterinary College was declared open on 12.8.85. Dr. K. Kalimuthu, Hon'ble Minister for Agriculture and Thiru K. A. Krishnaswami, Hon'ble Minister for Animal Husbandry participated in the function.

National Seminar on Rockphosphate in Agriculture, organised by the TNAU in collaboration with M S. Pyrite, Phosphates and Chemicals Ltd was conducted at Main campus, Coimbatore on August 23 & 24th 1985.

A training programme on Marketing Management was inaugurated at Tamil Nadu Agricultural University, Coimbatore for the Agricultural Marketing Co-operative personnel from 26th August to 7th September, 1985.

The seventh meeting of Indian Rice Development Council was held at Tamil Nadu Agricultural University on August 28-29, 1985.

The cropping system Field Day was celebrated at Tamil Nadu Agricultural University on August 30, 1985.

Two Field Days were organised by the University Research Centre, Salem on September 4, 1985 and October 3, 1985.

The Water Technology Centre Building, Tamil Nadu Agricultural University, constructed at a cost of Rs. 39 lakhs with the assistance of the Sweedish International Development Authority (SIDA), was declared open on September 30, 1985.

Mr. Lennart Sandin, Director of the Royal Institute of Technology, Stockholm commissioned the Computer Centre on September 30, 1985.

The instruments and equipments laboratory was declared open by Dr. Ulf Rundin of Royal Institute of Technology on September 30, 1985.

The Third Annual Workshop on All India Coordinated scheme on power tillers was conducted at Tamil Nadu Agricultural University, Coimbatore on October 3-5th 1985.

The Eleventh Convocation of the University was held at Tamil Nadu Agricultural University, Coimbatore on October 7, 1985.

The first Scientific Workers' Conference on Fisheries was held at Fisheries College, Tuticorin on October 9, 1985.

A National Seminar on 'Sulphur in Agriculture' was conducted at Tamil Nadu Agricultural University, Coimbatore on October 18-19, 1985.

An Environmental Education and Awareness compaign was conducted on December 6, 1985 at Jag.

The Thirteenth Farmers' day was celebrated at AG&RI, Madurai on January 3, 1986.

A three-day National Seminar on Management of soil borne diseases of crop plants was organised at Tamil Nadu Agricultural University, Coimbatore on January 8-10, 1986.

A National Seminar on Integrated Nutrient Management in Agriculture was conducted at TNAU, Coimbatore on January 20-22, 1986.

Farmers' day was organised at Kumaraperumal Farm Science Centre, Trichy on January 21, 1986.

National Seminar on Microbial Ecology was held at TNAU, Coimbatore on January 23-24, 1986.

Function on Agricultural innovation Break Through was organised at AC & RI, Madurai on January 25, 1986.

Field Day was organised by the National Demonstration Scheme. Salem on February 4th, 1986.

The third workshop of All India Coordinated Research Project on Renewable Sources of Energy for Agriculture and Agro-based Industries was inaugurated on February 8th, 1986, at Tamil Nadu Agricultural University, Coimbatore.

Contact programme for the course on paddy cultivation, offered under the Farm School on AIR, was organised at TRRI, Aduthurai on February 14, 1986.

An International Workshop on Growth Linkage Effects of Green Revolution on Regional Income and Employment, a collaborative research project of the TNAU and the International Food policy Research Institute, Washington DC was held at Ootacamund from 14th - 16th February, 1986.

One-day contact programme of Farm School on AIR on 'Fish culture' was organised at Fisheries College, Tuticorin on February 21, 1986.

Field Day on Co. 1 grass was conducted at Krishi Vigyan Kendra, Kattupakkam on March 3, 1986.

The State Level Training on maize and Millets production Technology for the year 1985-86 was organised at Krishi Vigyan Kendra, Pondicherry on March 11-14, 1986.

Under the Lab to Land programme agricultural inputs were distributed to farmers at Krishi Vigyan Kendra, Pondicherry on March 13, 1986.

Farmers' Day was organised at Krishi Vigyan Kendra, Regional Research Station, Vridhachalam on March 17, 1986.

Farmers' Day was held at Regional Research Station, Paiyur on March 27, 1986.

Prizes and awards

Dr. M. Balasubramanian, Director of Research (Agri), and Dr. S. Jayaraj, Director, Centre for Plant Protection Studies were awarded with 'Certification of Honour' for their outstanding contribution and significant achievements in the field of Entomology at the National Conference on Key pests of Agricultural Crops held at C. S. Azad University of Agriculture and Technology, Kanpur from 21st to 23rd December, 1985.

Foreign visits undertaken

Dr. V. Rajagopalan, Vice Chancellor and Prof. R. K. Sivanappan, Director, Water Technology Centre left on April 15, 1985 for Sweden, U.K., Switzerland, Italy and UAR on a study tour for three weeks.

The following Scientists were deputed abroad during 1985 - 86

Name of the Scientist (1)	Period of deputation (2)	Country to which deputed (3)	Purpose (4)
Dr. P. Kothandaraman, Dean, Madras Vety. College, Madras.	2-4 Nov.	Malaysia	To attend 30th Annual General Meets and Scientists' Conference in Kaula Lumpur, Malaysia.
Dr. P. A. Balu, Prof. and Head, Dept. of Clinics, Madras Vety. College, Madras.			
Thiru S. Santhana Bose, Asst. Professor, WTC, TNAU, Coimbatore.	25.5.85	Germany	Award of a fellworship under German Academic Exchange Service (DAAD) Fellowship Programme 1985-86.
Dr. R. Veluswamy, Assoc. Professor	7.7.83- 23.7.85	Manila	On post Doctoral Fellowship Training at IRRI.
Dr. R. K. Sivanppan, Director, WTC	Nov. '85	USA	To attend third International Drip/Trickle Irrigation congress held at California.
Dr. S. Thangavelu, Breeder, Oilseeds.	19.9.85- 3.10.85	Sudan & Ethiopia	Exchange of Scientific ideas and identification and collection of crops germplasm in IDRC project in sesamum.

(1)	(2)	(3)	(4)
Dr. C. Ramasamy Assoc. Prof. (Agrl. Eco) TNAU, Coimbatore - 3.	From 1.4.85 for 6 months	USA	For data analysis On Growth Linkage Effects of Green Revolution on Regional Income and Employment in Tamilnadu at the International Food Policy Res. Inst., Washington.
Thiru S. Vairavan, Assoc. Prof. (Ag Bot), TNAU.	1.2.85 31.5.85	Manila	For attending training programme in Genetic Evaluation and utilisation (GEU) at IRRI.
Dr. M. Balasubramanian, Director of Research (Agri)	1.4.85 4.4.85	Italy	For attending Third International Conference on Chitin/Chitosan at Ancona, Italy.
Thiru A. Sheik Dawood, Assoc. Professor, TRRI.	8.4.85 17.4.85	Australia	For attending workshop on international network on Soil fertility and fertilizer evaluation for Rice.
Dr. S. Chelliah, Director. TRRI. Aduthurai.	27.5.85- 31.5.85	Manila	For attending international Rice Genetic symposium, IRRI.
Dr. S. Arumugam, Prof and Head, Horticultural Res. Station, Thadiyankudisai.	9.5.85 13.6.85	USSR	For attending study tour for selection technique in fruits and vegetables.
Dr. P. Kothandaraman Dean, MVG, Madras.	10.6.85- 19.6.85	Germany	For attending second International "DLG symposium on Poultry Production in Hot climate zones" at Goslar near Hansorm.
Dr.. M Gulam Dastagir Asso. Prof. Forestry FRS, Mettupalayam.	14.9.85 13.9.86	Bangor U. K.	For undergoing 12 months Course in Environmental Forestry at the University College of North Wales.
Dr. SP. Palaniappan, Prof of Agronomy TNAU	15.1.86 4.2.86	Phillipines	For participation in the 11 Day orientation cum Training Course for Senior planning officers of ministry of Agriculture at IRRI.
Dr. K. V. Selvaraj. Assoc. Prof. (Agri)	26.8.85	Phillipines	For irrigation water management Training at IRRI, Manila.
Dr. S. Varadarjan Prof. of Agrl. Economics.	27.?.86 17.3.86	Japan	To attend a seminar on marketing Farm products from 3.3.86 to 14.3.86 at Japan conducted by the Asian Productive Organisation, Tokyo.

Finance and Accounts

The following statement indicates the classified summary of the transactions of the university during 1985-86.

Receipt

Details		Rs. in Lakhs
Opening Balances as on 1-4-1985	301.01	301.01
Receipts		
State Grant		
Agriculture	594.41	
Veterinary	240.35	
Fisheries	28.20	
		862.96
ICAR Grant		
For Agricultural Research Schemes	265.97	
Development Grant	44.50	
For Veterinary Research Schemes	21.78	
Grants to K.V.K., Pondicherry	12.77	
		345.02
Government of India Grant	30.96	30,96
Outside Agencies		
For Foreign and Indian Agencies Research Schemes	17.37	
For National Service Scheme	0.39	
		17.76
Other Receipts (Fees, Rent, Farm Receipts)		
Agriculture	153.46	
Veterinary	45.26	
Fisheries	0.70	
		199.42
Other Deposits including Loans and Advances		211.64
State Govt. Loan for House Building Advance		15.00
Recovery from loanee		6.18
Grand Total		1989.95

Expenditure

Details	Amount (Rs. in lakhs)
Agriculture - Non-Plan	591.73
Agriculture - Plan	161.39
Veterinary - Non-Plan	164.58
Veterinary - Plan	130.76
Fisheries - Plan	25.01
ICAR - Fully financed Schemes	227.13
ICAR - Partly financed Schemes	110.73
Govt. of India Schemes	31.22
Other Agencies Schemes	20.13
Capital Works -	
i) Agriculture	59.94
ii) Veterinary	9.87
iii) Fisheries	3.02
ICAR Development Grant	47.42
Hill Area Development Programme	7.32
TNAU Employees Pension Fund	46.11
House Building Advance	21.12
Krishi Vigyan Kendra, Pondicherry	11.30
Loans and Advances and Deposit transactions Account	199.40
Total	1868.18
Closing Balance	121.77
Grand Total	1989.95

The Finance Committee considered the proposal for the Revised Estimate for 1985-86 and Budget Estimate for 1986-87 of TNAU and recommended the estimates to the Board of Management. The Audit Report for the year 1984-85 have been received and will be placed before the Finance Committee. As the audit of accounts for 1985-86 has not been finalised, the expenditure details furnished above represent only unaudited and unreconciled figures.

Contribution of outside Agencies

The following outside agencies have contributed funds to carry out research as indicated against each during the year under report.

Name of Agency	Name of the Research Project
1. IFFCO, New Delhi	Research on fertilizer use and Management.
2. SPIC, Madras	Undertaking experiments on fertilizer use in soil and crop management studies.
3. Ford Foundation	Scheme for self-employment of rural women in agriculture and production of bio-control agents.
	Scheme for training women in enterprise management to encourage their participation in rural development at Coimbatore, Madurai and Tuticorin.
	Scheme for study of over-exploitation and under exploitation of groundwater, Coimbatore.
4. M s. Hoechest Co.,	Scheme for research on *Coleus forskholii*.
5. IDRC	Survey on the Production and Utilization of horsegram, Paiyur.
6. NABARD, Bombay	Project on Credit for Rural Development in Southern Tamilnadu.
7. Coir Board, Kerala	Scheme on Coir pith as manure in Agricultural Farms.

Scholarship

The Scholarships offered by the following agencies were accepted.

Name of the Donor	Amount	Purpose
M/s. Rhone-Poulene Agro Chemicals India Ltd., Bombay	25,000	M.Sc. (Ag) Entomology
M/s. Indian Explosives Ltd., Bangalore	26,600	M.Sc. (Ag) Agronomy
Nocil, Madras	25,000	M.Sc. (Ag) Entomology

Prizes and Medals

The following prizes and medals were instituted during 1985-86.

Name of the Donor	Amount	Purpose
1. T. Gopalan Nayar Memorial Prize	6.375/-	Best B. F. Sc., student of the University.
2. Dr. A. Srinivasan Memorial Fund	6,35,000 -	For the welfare of animal at Madras Vety. College, Madras.
3. Dr. P. Subramanian, Madurai	5,001/-	To open F. D. for awarding a prize to the best book on Animal Husbandry including Poultry either in Tamil or English.
4. TNAU Chief Guest Sardar Buta Singh Medal	5,000/-	Best M.F.Sc., student.
5. M/s. Potash Research Insitute of India	1,22,840/-	Scholarship to M.Sc., Agronomy students one at Madurai and another at Coimbatore.
6. Govt. of Tamil Nadu Fellowship in the name of " Bharathiar " in connection with his centenary celebration.	1,00,000/-	Interest to be utilised towards printing lecture notes, honorarium, TA/DA to guest lecturers and supply of lecture notes to libraries and Universities.

7.	M/s. Hindustan Lever Ltd.	6,504.64	Awarding prizes and Medals to the U. G. & P. G. Students belonging to Hort. Faculty.
8.	Faculty of Horticulture, Dean Dr. S. Muthuswami medal	5,000	Best Ph.D. student in Horticulture Faculty

Grant-in-aid by the University

The following matching grants were sanctioned during 1985-86.

		Amount
1.	Matching grant for the Students Club for 1982-83 and 1983-84 (Tuticorin)	4,000/-
2.	Matching Grant for the Students Union, A.C. & R.I., Madurai for 1983-84	5,000/-
3.	Matching Grant for Staff Club, TNAU. Coimbatore for the year 1985	3,600/-
4.	Matching Grant to M.V.C., Madras for the year 1983-84	
	i) Atheletic Association	5,000/-
	ii) Students Association	2,996/-
5.	Grant-in-Aid to SHIA, Coimbatore for 1984-85	10,000/-
6.	Matching Grant to Staff Club, A.C. & R.I., Madurai for the year 1984-85	2,100/-
7	Matching Grant for Ladies Club. A.C. & R.I., Madurai for the year 1984-85	400/-
8.	Annual Subscription to Association of Indian Universities for the year 1985-86	14,000/-
9.	Annual Subscription for Indian Agricultural Universities Association for the year 1985-86	3,000/-

University Budget Estimate for 1986 - 87

Annual Financial Estimate of Tamil Nadu Agrl. University has been approved by the Finance Committee / Board of Management for a gross appropriation of Rs. 1713.68 lakhs (inclnding I.C.A.R. & G. O. I. and Other Agencies, Loans and Advances and Deposit transactions).

A sum of Rs. 985.37 lakhs is expected as grant from the State Government to the University for the year 1986 - 87 for implementing various education and research and extension education programmes. Grants from ICAR will be about Rs. 393.69 lakhs including ICAR Dev. Grant and NARP Schemes. A grant of Rs. 33.13 lakhs and Rs. 16.48 lakhs is expected from Govt. of India and other agencies respectively. The University receipts will be in the order of Rs. 213.00 lakhs (approximately).

Audit

The audit certificates for 1983-84 have been forwarded to ICAR and G. O. I. for almost all the schemes sponsored by them. For 1984 - 85, audit certificates on more than 50% schemes sponsored by I. C. A. R., have been sent. The audit of General Fund Accounts of the University upto 1984 - 85 has been completed. The general result of the audit is satisfactory.

3. EDUCATION

AGRICULTURAL COLLEGE AND RESEARCH INSTITUTE, COIMBATORE

Dr. K. R. Ramaswamy held the post of the Dean (Agri). The College continued to offer B. Sc. (Ag)., M. Sc. (Ag) and Ph. D., degree programmes under the trimester system of education besides offering courses for the B. E. (Ag) and B. Sc. (Hort) degree programmes. A new degree course of B. Sc. (Forestry) was started during the year at Coimbatore.

Admission

The college reopened on 15.7.1985 for II, III and final B. Sc. (Ag) classes. The first year B. Sc. (Ag) and B. Sc. (Forestry) courses commenced on 24.10.1985. The number of students, on roll in I, II, III and IV year B.Sc. (Ag) and B. Sc. (Forestry) degree programmes were as follows :

Class	Students on roll		
	Boys	Girls	Total
I B. Sc. (Ag)	114	85	199
II B. Sc. (Ag)	66	115	181
III B. Sc. (Ag)	99	33	132
IV B. Sc. (Ag)	102	30	132
Total	381	263	644
B. Sc. (Forestry)	17	3	20
Grand Total	398	266	664

Educational Tour

The final B. Sc. (Ag) students were on an All India Study Tour from 16.2.1986 to 11.3.1986. They visited places of importance like Almadhi Cattle and Forage Farm, Poultry Research Station, Madras, ICRISAT and AICRPDA at Hyderabad, IARI, NRL and WTC at New Delhi, Haryana Agricultural University at Hissar. Forest Research Institute and Institute of Remote Sensing at Dehradun, Arey Milk Colony, Nehru Planatorium and Acquarium at Bombay, University of Agricultural Sciences and National Bureau of Soil Survey and Commonwealth Institute of Biological Control at Bangalore. They studied the various activities of the different institutions. They also visited Haridwar, Rishikesh, Agra and Mussouri The tour provided an opportunity to the students to expose themselves to different agro-climatic conditions and also the various research and extension programmes in operation at the various centres in India.

The third year B.Sc (Ag) students went on educational tour from 17.1.86 to 24.1.86 to Trichy, Aduthurai, Cuddalore, Vridhachalam and Yercaud to study the functioning of research stations and understand the various research activities of the stations.

Village stay programme

The final B.Sc (Ag) students, numbering 132 were placed at villages in the districts of Coimbatore, Periyar, Dharmapuri, Salem and Trichy with a view to give rural orientation and village experience to students. The programme lasted for one month from 9.12.85 to 8.1.86 in thirty five locations identified in the different districts. Five to six villages were selected in cach location and each village was alloted with one student. In order to guide the students and supervise their work during their stay one teacher was assigned for every two locations. The students conducted field study by making use of questionnaires designed for the purpose and they also worked along with the farmers. Contact farmers were identified for the purpose of helping the students at the village level. Many method demonstrations like control of red palm weevil, rhizome rot in turmeric, rat control etc. were conducted by the students. Several village meetings were organized by the students with the help of local Agricultural Officers. The students, during their stay, attended fortnightly meetings of the Training and Visit Personnel in their respective location to study the activities and functioning of T&V system. Newspapers and All India Radio gave wide coverage about this village stay programme organised by the University.

Method demonstration by students of final B.Sc (Ag) class

As part of the course curriculum in the use of Audio visuals in Extension Education, the students were trained in conducting skill teaching demonstration to the farmers in the real life situations. The students were taken to Naickenpalayam, Vazhukkuparai and Chinnathadagam villages for the purpose of giving practical training and the following demonstrations were conducted by the students themselves on seed treatment of maize with *Azospirillum*, use of groundnut decorticator, rat control, use of sex pheromone trap and seed treatment for pulses.

Scholarships

The details of scholarships awarded are given below :

S.No. (1)	Details of Scholarships (2)	Number of receipents (3)	Amount Rs. (4)
1.	National Merit Scholarship	13	18,890
2.	National Loan Scholarship	1	970
3.	National Foundation for Teachers' Welfare	2	1,000
4.	State Scholarship for Teachers' children	1	1,380
5.	S. C. Scholarship	105	2,28,453
6.	Adhoc Merit Grant for Sc	34	10,200

(1)	(2)	(3)	(4)
7.	Bright Student Award	3	3,880
8.	Gandhi Memorial Award	2	3,000
9.	S. C. Loan Scholarship	156	95,080
10.	B. C Scholarship	127	1,21,657
11.	B. C. Loan Scholarship	3	1,500
12.	ICAR - GOI Merit cum Means Scholarship	24	62,250
13.	HRDP - UG	3	7,200
14.	ICAR-Post Matric Scholarship to SC & ST	6	26,150
15.	Pondicherry State Scholarship	18	43,815
16.	Nagaland Scholarship	1	3,365
17.	Andaman & Nicober	4	6,720
18.	Amalgamated Funds	2	1,276
19.	USAID (ADC)	3	71,236
20.	General Cultural Scholarship Scheme	2	16,900
21.	M/s. Spic Ltd	2	53,200
22.	ASPEE	1	5,550
23.	M/s. EID Parry Ltd	2	2,400
24.	M/s. Velosical Overseas Corporation Ltd	1	2,500
25.	M/s. Indian Explosives	2	26,600
26.	M/s. Potash Research	1	5,950
27.	ICAR Junior and Senior Fellowship	85	8,30,677
28.	TNAU Merit Scholarship	98	1,12,473
29.	CASAM - Fellowship	12	1,19,776
30.	Ford Foundation Fellowship	4	13,334
31.	ICAR Scheme Fellowship	1	7,200
	Interest		17,394
	Total	719	19,21,926

Students' Hostel

Dr. SP. Palaniappan, Professor and Head, Department of Agronomy continued as Warden and the following staff members served as Deputy Wardens.

Deputy Warden (Accounts)	:	Dr. I. Irulappan, Assoc. Professor of Horticulture
Deputy Warden (Mess)		Dr. PL. Lakshmanan, Assoc. Professor of Nematology
Deputy Warden (Stores)	:	Thiru U. Bangarusamy Asst. Professor of Crop Physiology
Deputy Warden (Womens Hostel)	:	Tmt. Susheela Thirumaran

Among the total strength of 1274 stadents (men and women), 1111 students of B. Sc. (Ag), B. Sc. (Hort), M. Sc. (Ag) and Ph. D. degree programmes were accommodated confortably in various hostels of the University Out of them, 20 were students, including four women and four post-graduate students, from foreign countries.

The University Medical Officers took care of the medical needs of the inmates of the hostel. The Lady Medical Officer was attending daily to the care of girl students in the Ladies' Hostel between 4.00 and 5.00 p.m.

Seven messes were being run efficiently and economically on the basis of dividing system to cater to the needs of hostlers. One mess was exclusively run for women students of Agriculture, Horticulture, Engineering and Sericulture. The provision and groceries were purchased from TNAU Employees Co-operative Stores, Chinthamani Co-operative Super Marke and Regional Distribution Centre, Coimbatore. Rice was purchased from the Tamil Nadu Co-operative Federation Ltd., Salem. The controlled commodities like sugar, maida, rava and sooji were supplied by the Civil Supplies Corporation, Coimbatore. The required milk was procured from the University dairy and Co-operative Milk Producers' Union Ltd., Coimbatore.

An amount of Rs. 25 lakh was spent towards the purchase of groceries, milk, mutton and vegetables during 1985 - 86. The following items of expenditure were incurred from the University Funds.

New vessels	Rs.	48,758
Electrical goods	Rs.	14,492
Mechanical goods	Rs.	5,825
Tinning of vessels	Rs.	14,492

A modern kitchen equipment with a rice cooker, idly cooker, milk boiler and sterilizer costing Rs. 60,000 - was installed in the Womens' Hostel mess. Five colour TV sets were installed in the students' hostels for the entertainment of the students.

A students' canteen was functioning to meet the needs of stationary and cosmetics besides supplying coffee, tea and light snacks. The annual transaction of the canteen during 1985-86 was about Rs. 1.90 lakhs.

The students' Welfare Committee constituted for the purpose of running the hostel efficiently met three times during the year to review the mess rates and take decisions on the day-to-day activities of the hostel.

The hostel day was celebrated on 10.8.1985. Dr. D. Daniel Sundarraj, former Dean of the college was the Chief Guest and Dr. V. Rajagopalan, Vice-Chancellor, Tamil Nadu Agricultural University presided over the function.

Students' Club

The activities of the Students' club for the year 1985-86 were inaugurated by Dr. V. Rajagopalan, Vice-Chancellor, TNAU and Tmt. Swarna Rajagopalan lit the sacred lamp on this occasion.

The Orientation Day to first year under graduate students was conducted on 2.12.1985. A carnival show was arranged in this connection. The even-function was presided over by Dr. K. R. Ramaswamy, Dean (Agri). A cultural programme by junior students and staff members was also arranged.

The students participated in the inter-collegiate cultural programme conducted by C. I. T. Coimbatore. Mr. Karunanithi of II B.Sc. (Ag.) won first prize in dance and Nagarajan of III B.Sc. (Ag.) was awarded the best drummer prize. The team won third prize in overall performance.

The second B.Sc. (Ag.) students of main campus Coimbatore organised a farewell party to students of II B.Sc. (Ag.) Killikulam on the eve of their departure to Killikulam college.

The activities of Social Service League were inaugurated by Dr. V. Subramaniyan, Dean (Engg) on 2.2.1986. The Inaugural function of the debating society was held on 13.2.1986. Thiru K. Meenakshisundaram, retired Director of Collegiate Education delivered the special lecture on 'Turning point' on this occasion. In the inter-collegiate competition held at PSG Arts college, the college Orchestra won second prize in light music competition. Thiru Gopikrishna II M.Sc. (Ag.) won third prize in mimicry. Thiru M. Sathyamoorthy of II B.E. (Ag.) won second prize in debating competition.

Thiru A. Nagarajan of III B.Sc. (Ag.) won second prize in the inter-collegiate photographic competition conducted by Kongunadu Arts College, Coimbatore.

Sports and Games

The Association of Indian Universities has entrusted the responsibility of organising the South Zone inter-University and All India Inter Zone Inter-University Hockey Tournament to TNAU, Coimbatore and the same were organised efficiently during January-February 1986. The hockey team participated in the Coimbatore District Hockey Association league tournament.

The University cricket team participated in the South Zone inter-university cricket tournament held at Calicut. Thiru D. Sundararaj, Physical Director, Veterinary College, Madras, accompained the team as Manager. TNAU

cricket ground was the venue for the State level inter-district schools tournament finals. Dr. K. R. Ramaswamy, Dean (Agri) inaugurated the match. The University cricket team (main campus) participated in the II Division league Tournaments and also in CDEA league tournament held on 6th and 21st October.

The University foot ball team participated in the South Zone inter-University tournament held at Trichur from 14th October, 1985 and in the inter-collegiate hockey tournament for Dean's Trophy conducted by Agricultural College, Madurai. The Kalaimani Memorial Cup football tournament was conducted from 24.3.1986 to 27.3.1986.

The University basket ball team participated in the South Zone Inter-University basket-ball tournament held at Annamalai University.

The indoor gymnasium at TNAU, main campus was the venue for gymnastic events of tenth national games for women from 28th to 30th December.

The TNAU main campus Kabaddi team won the Indira Gandhi Memorial cup and Viduthalai Puli Kuttimani Memorial cup in the Kabaddi tournaments held on 26th January.

National Service Scheme

Thiru R. Netaji Seetharaman continued to hold the post of NSS Programme Coordinator of the University. During the year one additional NSS unit exclussively for the girl students was formed at the Agricultural College, Coimbatore. Six units are functioning in the University as detailed hereunder:-

Agricultural College, Coimbatore	2
College of Agricultural Engineering Coimbatore	1
Agricultural College, Madurai	1
Agricultural College, Killikulam	1
Madras Veterinary College, Madras	1
Total	6

There were 600 student volunteers under the NSS programme and they involved themselves in activities like weed control, Parthenium eradication, rat eradication, afforestation programmes and promoting kitchen gardening in urban areas. The volunteers also collected used clothes and distributed them to the tribals living in Maruthamalai area

National Cadet Corps

The N. C. C. cadets of the 4/4 TNBN NCC were given training in drill with and without arms, map reading exercises, use of weapons, firing range practice, judging the distance, field craft organisation of infantry batallion and other adventure exercises.

During the 15th annual convocation of TNAU held on 7.10.85 at the main campus, a guard of honour parade was arranged and about 40 NCC cadets were trained in drill and the guard of honour was presented to His Excellency, the Governor of Tamil Nadu, Thiru S. L. Khurana and Hon'ble Union Minister for Agriculture and Rural Development Sardar Bhuta Singh. On the occasion of the ninth national women championship tournaments held at Nehru Stadium on 25.12.85 a colourful march past was presented to Hon'ble

Chief Minister of Tamil Nadu Dr. M. G. Ramachandran and about 20 cadets of the University took part on that occasion.

A one-day cricket match was organisd at Coimbatore on 30.10.85 between India and England (Ambassidor-X) On that occasion 20 cadets of the University volunteered and took part in various activities connected with the conduct of the match.

Eighteen cadets of the University took part in annual training camp held at Alandurai from 22.12.85 to 2.1.86. This camp attendance helped the cadets to prepare for B and C certificate examinations.

The NCC officer of the University Dr. Lt. P. Rajasekaran, underwent R/SD/part II - 25 refresher course at Kamptee from 20.1.86 to 18.2.86.

A coaching class was arranged on 11.3.1986 for the benefit of the NCC cadets of this University for imparting military training.

During the year, 15 cadets were presented for the 'B' certificate examination on 13.3.86 and 13 cadets for 'C' certificate examination held on 24th and 25th March, 1986.

COLLEGE OF AGRICULTURAL ENGINEERING, COIMBATORE

Dr. V. Subramaniyan, continued to be the Dean during the report period. The faculty offered B. E. (Agri) degree programme besides offering courses in Agricultural Engineering for B. Sc. (Ag) and B. Sc. (Hort) students and Sericulture diploma students. This faculty continued to offer M. E. (Ag) degree programmes in Farm Machinery and Soil and Water Conservation Engineering. Two more postgraduate programmes, namely, Post-harvest Technology and Agro-Energy were introduced during this year.

Admission

Ninety nine students were admitted to I B. E. (Ag) course. The first trimester for the I B. E. (Ag) commenced on 24.10.85 and for the II, III and final B. E. (Ag) on 28.11.85, 23.12.85 and 2.1.86 respectively. The strength of the students in the second, third and final years was 78, 74 and 80 respectively.

Examinations

Regular tests and examinations were conducted as per the regulations of the trimester system of teaching. The ninth and tenth supplementary examinations were held during June, 1985 and December, 1985 respectively.

Educational Tour

The III B. E. (Ag) of four year-students numbering 72 were on tour from 26.7.85 to 2.8.85 and they visited the following industries and institutions in Tamil Nadu.

i) M/s Seshayee Paper and Boards Limited, Erode.

ii) NAFED Processed Foods, Vellore.

iii) Institute of Hydraulics and Hydrology, Poondi.

iv) 'J' Farm, Madras, TAFE.

v) M/s. National Engineering Company, Madras.

vi) Agricultural Implements Workshop and Paddy Processing Centre, Tiruvarur.

vii) Melur Plough Works, Melur.

viii) Tractor Workshop, Madurai.

ix) Fisheries College, Tuticorin.

x) Southern Petro - chemical Industries Corporation Ltd., Tuticorin.

xi) Parasakthi College, Courtallam.

The final year students numbering 39 went on an All India study tour from 12.8.85 to 2.9.85 and they visited the following institutions / industries and organisations in India.

i) M/s V. S. T. Tillers' Viwesvaraya Industrial and Technology museum, M/s National Seeds Corporation and University of Agricultural Sciences at Bangalore.

ii) Coastal Erosin at Goa.

iii) M/s International Tractors, Bombay, Marine drive RCC protection walls against sea erosion, M/s. American springs and processing works, Arey milk company and Institute of Technology at Bombay.

iv) Central Soil conservation centre for Research and Training and Central Forest Research Station Dehradun.

v) Water Technology Centre, Indian Agricultural Research Institute, M/s. Eicher Good Earth Ltd., Faridabad and M/s. Frick India Ltd. and Indian Institute of Technology at New Delhi.

vi) Central Plant Protection Training Institute, Andhra Pradesh Agricultural University, and ICRISAT Patancharu at Hyderabad.

Practical Training

The III B. E. (Ag) students of four-year-system were on practical training from 6.12 85 in the following Organisations :

i) M/s P S G Industrial Institute, Coimbatore.

ii) Government Tractor Workshop, Coimbatore.

iii) Thudiyalur Co-operative Agricultural Society, Thudiyalur.

iv) Soil Conservation Scheme, Ooty.

v) Command Area Development Programme, Gobi.

vi) M/s LCT Industries, Singanallur.

Scholarships

The details of Scholarships awarded during 1985-86 are detailed below :

Details of Scholarship	No. of recipients
ICAR Merit Scholarship	16
Andhra Pradesh Government Scholarship	2
National loan Scholarship	1
NCERT Scholarship	2
Schedule Caste loan and Scholarship	44
Teachers Welfare Scholarship	1
Backward Class Scholarship	59
Adhoc Merit Grant	10
Farmers' Welfare Scholarship	2
TNAU Merit Scholarship	18
National Merit Scholarship	11
Govt. of Pondicherry Scholarship	2
Total	168

Prof. R. Karunanidhi, Professor and Head, Department of Farm Machinery continued to be the warden during the period. Thiru A. Sampath Rajan, Associate Professor of Bio-Energy and Thiru K. Rangasamy, Associate Professor of Farm Machinery served as Deputy Wardens. The Student office bearers were also selected to assist in the various spheres of the functioning of the hostel. In the hostel, 296 students stayed in 1985-86 including 30 lady students in the Ladies hostel.

National Service Scheme

There were 150 volunteers from this college in the National Service Scheme. A one week special camp was organised during second week of August 1985 at Nellithurai village near Mettupalayam and 50 volunteers attended the camp. Village cleaning and reformation works were taken up. During night hours demonstration of improved agricultural implements and equipments was conduced to farmers. Social service to people residing in the outstriks of the villages was also done.

FACULTY OF HORTICULTURE, COIMBATORE

Dr. S. Muthuswami, continued as Dean (Horticulture) till 30.6.1985 From 1.7.1985 to 31.3.1986, Dr. K. R. Ramaswamy, Dean (Agri) was in full additional charge of the Post of Dean (Horticulture).

The Faculty of Horticulture continued to offer B.Sc (Hort), M Sc (Hort) and Ph.D. degree programme under the trimester system of education,

The Faculty also offered courses to B.Sc (Ag) and B.E. (Ag.) degree programmes.

At Horticultural Research Station, Thadiyankudisai, a Post Graduate diploma course in plantation crops was offered.

Admission

The college reopended on 15.7.1985 for II nd, IIIrd, and IVth B.Sc (Hort) courses. The first year B.Sc. (Hort) course commenced on 24.10.1985.

The number of students on roll in Ist, II nd, III rd and IV th year B.Sc (Hor) is as follows:

Students on roll

	Boys	Girls	Total
	26	30	56
	21	19	40
	24	18	42
	30	19	49
Total	101	86	187

Educational Tour

The final B.Sc. (Hort.) students were on an All India Study Tour from 16.2.86 to 11.3.86. They visited the following places of interest, which gave them an idea on different research and extension programmes which were in operation at the various centres.

University of Agricultural Sciences and Indian Institute of Horticultural Research.

National Bureau of Soil Survey, common wealth Institute of Biological Control, Bangalore.

Arey Milk Colony. Bombay.

Nehru Plantorium and Aquarium, Bombay.

Forest Research Institute and Institute of Remore Sensing, Dehradun.

Haryana Agricultural University, Hissar.

Indian Agricultural Research Institute, New Delhi

Nuclear Research Laboratory, New Delhi

Water Technology Centre, New Delhi

ICRISAT & AICRPDA, Hyderabad

Almadhi Cattle and Forage Farm and Poultry Reasarch Station, Madras

The final year B.Sc. (Hort) students went to the Horticultural Research Station, Yercaud for Plantation training in Coffee Cultivation from 22.11.1985 to 7.12.1985.

The final B.Sc. (Hort) students were also on tour to the Nilgiris on 17.6.1985 for the study of temperate vegetables cultivation.

The Third B.Sc. (Hort) students were on (0+1) short tour for the study of fruit crops from 2.7.1985 to 6.7.1985 and visited Kodaikanal, Thadiyankudisai and Periyakulam for the study of temperate, sub-tropical and tropical fruits.

The third B. Sc (Hort.) students were on tour from 2.12.1985 to 5.12.1985 for knowing about plantation crops especially, tea and cinchona in Anamalai. They also visited Vridhachalam, Veppankulam, Srivilliputhur and Nagercoil for the study of cashew, coconut, palmyrah and rubber.

The second B. Sc. (Hort.) students visited the Nilgiris on 25.5.1985 to grain knowledge about the growing of hill vegetables and flowers.

Scholarship

The details of Scholarships awarded during 1985-86 are given below :

1.	Adidravidar Welfare Scholarship	40
2.	Backward Classes welfare Scholarship	36
3.	Adidravidar Welfare loan Scholarship	38
4.	Gandhi Memorial Scholarship	1
5.	National Loan Scholarship	3
6.	National Teachers welfare fund Scholarship	1
7.	Colombo plan stipend Ph. D. student	1
8.	ICAR Merit cum means Scholarship U. G. Students	8
9.	ICAR Junior Fellowship	6
10.	ICAR - Senior Fellowship	4
11.	Ad-hoc merit	5
12.	ICAR Post matric Scholarship (Under Graduate)	1

Village stay programme

The final B. Sc. (Hort) students numbering 50 were distributed as follows for the Village Stay Programme from 9.12.1985 to 9.1.1986.

Place	District	No. of Students
Naicken Palayam	Coimbatore	6
Sathyamangalam	Periyar	13
Ayothiapattinam	Salem	5
Yethapur	Salem	5
Nallampalli	Dharmapuri	5
Thimmapuram	Dharmapuri	5
Kelamangalam	Dharmapuri	6
Jeenur	Dharmapuri	5

The students in each centre were guided by one teacher for collecting the information through a questionnaire. Further, they attended the T and V workshops and T and V fortnightly meetings in the respective regions. In the villages they were with the identified contact farmers and also attended several village meetings organized by the village level officers. The students were benefited very much through this village stay programme.

AGRICULTURAL COLLEGE AND RESEARCH INSTITUTE, MADURAI

Dr. T. Kumaraswami continued as Dean during the period under report. There were 14 departments, ten under the faculty of Agriculture and four under the faculty of Basic Sciences and Humanities. The Dean was assisted by an Administrative Officer and an Accounts Officer in office administration and a Warden, three Deputy Wardens and one Tutor in the hostel administration.

Admission

The number of students on roll during 1985-86 were as follows:

I B.Sc. (H.Sc)	—	15
II B.Sc. (H.Sc.)	—	8
III B.Sc. (H. Sc.)	—	16
I B.Sc. (Ag.)	—	88
II B.Sc. (Ag.)	—	119
III B.Sc. (Ag.)	—	89
IV B.Sc. (Ag.)	—	105
I M.Sc. (Ag.)	—	41
II M.Sc. (Ag.)	—	55
I M.Sc. (Hort.)	—	3
II M.Sc. (Hort.)	—	7
I M.Sc. (FS&N)	—	6
II M.Sc. (FS&N)	—	5
Total		557

Education tour

The II B.Sc. (Ag.) Students were taken on educational tour in two batches to Agricultural Research Stations at Periyakulam, Kodaikanal, Srivilliputhur, Kovilpatti, Tirunelveli, Tirupathisaram, Aruppukkottai and Paramakudi and also to the Fisheries college at Tuticorin from 27.1.86 to 2.2.86.

The III B.Sc. (Ag.) students were on educational tour to Research Stations at Vedasendur, Aliyarnagar, Mettupalayam, Ooty, Bhavanisagar, Vridhachalam, Aduthurai, Trichy and Pudukkottai and also to the main campus at Coimbatore from 26.12.85 to 2.1.86.

The final year B.Sc. (Ag.) students went on an All India tour from 5.2.86 to 28.2.86. The students visited Madras Veterinary College, Madras and various Agricultural Universities and Research Centres at Hyderabad, Bombay, New Delhi and Bhubaneswar.

The final B.Sc. (H.Sc.) students were on educational tour to Gandhigram Rural Institute and various factories and the main campus at Coimbatore and Ooty from 23.1.86 to 26.1.86.

Village Stay Programme

The final B.Sc. (Ag.) students had undergone village stay programme for one month from 26.12.1985 to 25.1.86.

Scholarships

Details of Scholarships	UG	PG	Total
Adidravidar Welfare Scholarship	51	—	51
Backward Class Welfare Scholarship	72	—	72
DNT Scholarship	5	—	5
ICAR Merit Scholarship	23	—	23
Agri Merit Scholarship	37	16	53
ICAR Junior Fellowship	—	18	18
National Merit Scholarship	22	—	22
National Loan Scholarship	2	—	2
Ford Foundation Fellowship	—	2	2
Pondicherry State Scholarship	3	—	3
Ex-service Men Welfare Scholarship	1	—	1
Aspee Agrl. Res. & Dev. Foundn. Scholarship	3	—	3
Amm. Arunachalam Shastiapthapoorthy School	1	—	1
Adidravidar Welfore Loan Scholarship	48	—	48
SPIC Ltd., Scholarship	—	2	2
Indian Explosive Ltd., Scholarship	—	2	2
Farmers Committee Fund Scholarship	1	—	1
S. J. Jindal Trust Scholarship	1	—	1
Arunachal Pradesh Scholarship	—	1	1
ICAR Scholarship under HRDP	2	—	2
Total	272	41	313

Students' Hostel

Dr. S. Ramiah, Professor and Head, Dept. of Agronomy was the Warden and he was assisted by three Deputy Wardens and one Tutor. Selvi G. Manimegalai, Assoc. Professor and Head, Department of Home Science and Selvi P. Banumathi, Asst. Professor of Food Science and Nutrition were the Deputy Wardens for the Ladies' hostel.

There were 422 students residing in the hostel during 1985-86. Medical facilities to the inmates of the hostels were provided by a full time Medical Officer.

Students' Club

The 20th Annual Sports Meet was held on 30.4.85 and the meet was declared open by Thiru D. Mukherjee IPS Superintendent of Police Madurai North. Muthamizh Vizha was inauguarated by Thavathiru Kundrakudi Adigalar and was celebrated from 5.6.85 - 7.6.85. Dr. V. Rajagopalan, Vice-Chancellor, TNAU gave the 20th College day address on 27th June, 1985 and distributed the prizes. A students' Recreation hall and floodlit basketball court were declared open by the Vice-Chancellor and Dr. D. Daniel Sundarraj, former Dean of Agricultural College, Coimbatore respectively. A magazine by name 'Vasantham' brought out by the students of Home Science was also released by the Vice-Chancellor on that occasion.

The members of the hiking society went on hiking expedition by cycle to Kanyakumari and other places from 13th to 19th June, 1985.

The inter-collegiate hockey tournament for the Dean's Trophy was conducted from 12th to 14th October, 1985.

The orientation Day for the I. B.Sc. (Ag.) was held on 1.11.85. The 20th Club Day and Hostel Day were held on 4.11.85. The inaugural function of the Students' Club activities for the year 1985-86 was held on 22nd November, 1985.

A mass running race by the students and staff around the campus was organised on 16.12.85 to observe the celebration of International Youth Year.

Sports and Games

The students took part in the Inter collegiate Hockey Tournament for the Dean's Trophy on 12-14 October, 1985.

National Cadet Corps

The National Cadet Corps, D/12 Company of this college was attached to 7 (TN) Battalion, NCC, Madurai. Forty cadets were enrolled from second, third and final B.Sc. (Ag.) classes. The cadets were given training in foot drill, arms drill, weapon handling, map reading and first aid in 40 parades of two hours each.

Six cadets attended the combined Annual training camp at Sri Paramakalyani College, Aruppukkottai from May 26, 1985 to June 6, 1985. The adventure training viz., cycle expedition cum trekking to Kodaikanal was flagged off by Dr. T. Kumaraswami, Dean of the college and Major M. N. Kamalesh, 7 (TN) Battalion, NCC, Madurai presided over the inaugural function. Thirty cadets and Captain,

S. Subramanian, NCC Officer went on cycle expedition to Periyakulam on 31 October, 1985. The 'B' certificate examination for the cadets was conducted in this campus. Nine cadets appeared for this examination and six passed out. Ten cadets participated in the March past during NCC day celebration conducted at Madurai Medical College on February 22, 1986.

National Service Scheme

The NSS unit of the College actively functioned during the year and there were one hundred student volunteers on roll. Dr. T. Kumaraswami,, Dean of this institute continued to be the Chairman of the NSS. Thiru S. D. Sundarasingh, Assistant Professor of Agronomy was the Programme Officer.

Activities of NSS

i) Laying out kitchen garden and donation of old news papers to the inmates of Hellen Keller Service Society for the blind, Madurai.

ii) Tree planting campaign was held on 11.10.1985. Two hundred pits were dug around the stadium ground of the college from 7th to 10th October, 1985 and mass tree planting programme was launched on 11.10.85. Thiru Varadharajulu, District collector of Madurai, Mrs. Varadharajulu, the Dean, the staff members and students planted seedlings.

iii) Student volunteers participated in the International Youth Year Blood Donors and Motivators Day celebration on 13.2.86.

iv) Assistance was given during the conduct of Farmers' Day Celebrations.

AGRICULTURAL COLLEGE, KILLIKULAM

Dr. T. K. Kandaswamy continued to be the Dean of the College during the period under report.

Admission

The College reopened on 1.2.1985 for students of II B. Sc. (Ag), who were stationed at Coimbatore campus during their I trimester and began their second trimester on 27.11.85 at Killikulam campus. The classes commenced on 24.10.85 for the students. The number of students on roll in 1985-86 is given below:

I B. Sc. (Ag)	-	90
II B. Sc. (Ag)	-	92
		182

Scholarships

The details of scholarships awarded are given hereunder :-

Details of Scholarships	No of Students Awarded I B. Sc.	II B.Sc.	Total
Backward Class Scholarship	13	5	18
ST / SC Scholarship	12	—	12
ST / SC Scholarship (Pondicherry)	3	—	3
Total ...	28	5	33

Student's Club

The students' Club was inaugurated on 28.11.85 by Dr. K. Kalimuthu. Hon'ble Minister for Agriculture. Students participated in Inter - collegiate cultural competition. National Inter-collegiate T. V. Quiz programme and Horticultural show organised by the *Department of Horticulture and won* several prizes. Interclass competitions in drama, debate and arts and photography were conducted in the college.

MADRAS VETERINARY COLLEGE, MADRAS

Dr. P. Kothandaram continued as Dean of the College during 1985-86. The college offered B. V. Sc., M. V. Sc. and Ph. D. degree programme in the field of Animal Science.

Admission

During the year, 146 students were on roll in I B. V. Sc., 14 in I M. V. Sc. and 16 in I Ph. D. degree programmes. The dates of commencement of the college to various classes are given below:

Class	Date of commencement
I B. V. Sc.	24.10.1985
II B. V. Sc.	5.9.1985
III B. V. Sc.	14.10.1985
IV and V B. V. Sc.	20.1.1986
Post-graduate classes (M. V. Sc. and Ph. D.)	16.12.1985

Scholarships

The details of Scholarships awarded are given below :-

Name of the Scholarship	No. of recipients	Amount Rs.
Government of India	94	1,64,355
I. C. A. R.	42	56,000
State (SC, ST, BC etc)	201	1,60,725
T. N. A. U.	39	51,200
Other agencies (Madras Race Club Scholarship for M.V.Sc. Students)	1	5,800
	377	4,38,080

Student' Hostel

Dr. V. Ulaganathan, Professor and Head, Department of Animal Genetics, served as Warden and he was assisted by three Deputy Wardens, One Assistant Accounts Officer and other office staff in the hostel administration. Student office bearers were elected to assist the hostel administration in its various spheres of functioning.

To look after the students' health and maintenance of the campus in hygienic condition, a hygiene secretary was elected by the students. Periodical spraying of pesticides and other hygienic operations were undertaken during the year. Two messes were run to cater to the needs of the immates of the hostel.

Students' Club

The Madras Veterinary College Students' Association was inaugurated by the Hon. Minister Thiru R. M. Veerappan on 7.3.1986. The students brought out a new magazine called 'Vets time' apart from the magazine 'Tamil Mullai' Inter-class competitions in the fields of Tamil and English literary and fine arts were conducted. In addition, inter collegiate competitions were held to foster friendship, brotherhood and National integrity among the students. Tamil literary association conducted inter-collegiate competitions under the name "Elamai, Enimai, Inbam". A cultural Festival called 'Vet fest' 86 was organised. The Science Club of MVCA conducted quiz competition on wild life which attracted many talented participants from various colleges.

Sports and Games

Dr. P. Mahalingam, Ph.D, continued as the Sports Secretary for the year 1985-86. The college teams put up creditable performances in A. L. Mudaliar Inter-colleglate Athletic Meet, Gill memorial Hockey Tournament, I. T. I Sports Festival, Betrom Tournament, Anna University Tournament and Police-Public Tournaments.

Thiru D. Sundararaj, physical Director was nominated as the Manager of the TNAU cricket team that participated in the south zone Inter-University tournament held at Calicut.

The inter-class tournaments were conducted during February-March, 1985 and the Annual Sports Day was conducted on 26th June 1985 with Lt. Col. Venkataraman, R. V. C. as the Chief Guest.

The Madras Veterinary College Sports Festival was organised in August, 1985. Altogether 19 city colleges took part in the Sports Festival and Dr. P Kothandaraman, Dean presided over the function and prizes were distributed by Dr. V. Rajagopalan, Vice-Chancellor of the University.

During the year basket ball and Volleyball courts were provided with flood lit facility and levelling of the College play ground was also taken up. Additional facilities were also provided for indoor games like table tennis, Chess and carrums.

National Cadet Corps

The NCC unit (No. 1 (TN) R & V Sqn. NCC) was moved into the Madras Veterinary College campus on 17.2.85

from Tambaram. Subsequently, 13 horses were received from RTS & Depot Sharanpur on 7.5.85 to impart training in equitataion and animal management to the cadets. Ond hundred and fifty students were enrolled as I batch of of cadets and training commenced from November, '85. Cadets were given training in basic drill and preparing and handling of horses to master the art of equitation. This was the only unit wherein horse riding was taught to cadets of NCC in Tamil Nadu. Eighteen cadets gave their willingness for eye donation and submitted pledge cards with Time Eye Research Foundation, New Delhi.

National Service Scheme

The National service scheme of the college functioned well under the chairmanship of Dr. P. Kothandaraman, Dean of the College. The students strength of the NSS unit was 100. Hasthinapuram remained to be the adopted village. The student volunteers under the leadership of Dr. M. Mahadevan Pillai, the Nss Programme Officer, visited Hasthinapuram under regular activities and rendered active service.

A special camp for a duration of 10 days was conducted at Thiruneermalai village from 1-10 January, 1986 and 39 student members, four local youths and the NSS programme Officer participated in the camp.

The following activities were carried out during the samp period.

a) Cattle of the farmers were vaccinated against Rinderpest, Haemorrhagic Septicaemia and fowls with RDVK vaccines.

b) Roads were repaired.

c) Street cleaning and sewage cleaning were carried out.

VETERINARY COLLEGE AND RESEARCH INSTITUTE, NAMAKKAL

The second Veterinary College and Research Institute of Tamil Nadu Agricultural University was established at Namakkal in 1985 and Dr. M. P. Arumugam joined as the Special Officer of the College on 14.6.1985.

Admissions

Seventy-four students were admitted during the academic year, 1985-86 The First Year courses were being continued during the year under report. The infrastructural facilities are being developed.

Scholarships

The Details of Scholorships awarded are given below:-

Name of the scholarship	No. of recipients
National scholarship	4
Backward class scholarship	15
S. C.	10
Ad-hoc Merit grant	1
State Post Merit scholarship Pondicherry	1
Total	31

Students' Hostel

Hostel for sixty four students who stayed in rented building at Nallipalayam (3 km away from College) started functioning from 15.11.1985.

FISHERIES COLLEGE, TUTICORIN

Dr. G. Jegatheesan continued to be the Dean i/c during 1985-86.

The first trimester for the first year B.F.Sc. programme was started on 24.10.1985 and 14 students were admitted into the first year B.F.Sc. programme during the year 1985-86.

University Examinations

The fourth supplementary examinations were conducted as per the regulations of the trimester system of teaching.

Admission

The number of students on roll was as follows:

Class	Number of students
I B.F.Sc.	14
II B.F.Sc.	17
III B.F.Sc.	17
IV B.F.Sc.	19
I M.F.Sc.	-
II M.F.Sc.	6

Scholarships

The details of scholarships awarded during the year 1985-86 are given below:

Name of the scholarship	No. of Students	Amount (Rs.)
Backward Class Scholarship	18	18,463
Scheduled Caste Scholarship	67	18,072
Scheduled Caste Loan Scholarship	2	2,300
National Loan Scholarship	2	1,940
ICAR Merit Scholarship	5	7,500
ICAR Jr. Fellowship (P.G.)	3	34,500
Total	97	82,773

Education tours

The IV B.F.Sc. Students went on an All India tour for 22 days from 6.5.1985 to 27.5.1985 for studying the various activities of fisheries importance at Calcutta, Kashmir, Bombay, Goa, Mangalore and Cochin.

The III B.F.Sc. students undertook a tour for seven days (from 22.5.1985 to 30.5.1985) to important fishery establishements at Madras, Coimbatore Ooty, Mettur, Portonova and Madurai.

Students' Hostel

Dr. G. Jegatheesan, Dean i/c was the warden and Thiru A. Basheer Ahamed, Assistant Professor functioned as Deputy Warden. There were 74 students including six post-graduate students residing in the two buildings of the hostel. The hostel inmates were provided with one colour and one black and white T. V. sets, a stereo record player and a radio for their entertainment.

Students' Club

The students' club was inaugurated by Thiru V. V. D. Nithyanandam on 27.4.1985 and Thiru T. K. Kurup, General Manager, SPIC, was the Chief Guest. Thiru S. *Chandrasekaran, I.B.F.Sc* bagged a Gold Medal in the Essay Competition conducted by Kanchi Sankarachariar meet on 31.4.1985. The Quiz Team led by Thiru R. Jeyaraman, I. M. F. Sc. got the first prize in the quiz on fisheries conducted on 22.6.1985.

The College Rotaract Club was launched on 29.7.1985 with Dr. P. Selvaraj as the Staff Co-ordinator. The Rotaract Club arranged for a blood typing donating group campaign for students and staff on 9.8.1985. Sixteen Rotaractors donated blood to Tuticorin Government Hospital. Rtr. R. Jeyaraman was awarded the Mr. RYLA '85 trophy in the Rotary Youth Leadership Awards Camp held at Sivakasi during 20-22, September. Rtr. R. Jeyaraman scored maximum points in the quiz conducted at Kanpur by the All India RYLA Camp during 18-22.10.1985.

The Editorial Board of the 'SEA-GULL' offered a one day training in journalism. The inter collegiate quiz competition FIZZOREE '85 was held on 6.8.1985 with Dr. J. Vasanthakumar, Assistant Professor as the Quiz Master.

In the elocution competition conducted by the Pearl City Youth Jaycees on 9.9.1985, Tvl. A. N. Balaji and P. Selvaraj were awarded the first and second prizes respectively. Tvl. Amal Xavier (IV B. F. Sc.) and John Thomas (II B. F. Sc.) ranked first in the inter-collegiate quiz on sports conducted by the Youth Jaycees.

The Students' Club organised a 'Kavi Arangam' on 13.9.1985. Thiru A. N. Balaji was ranked second in the public speaking competition conducted by the State Jaycees Conference at Kanchipuram on 13-14, October, 1985. The team, led by Thiru R. Amal Zavier, won the first prize in the inter-collegiate quiz competition conducted by SPIC Nagar Rotary Club on 3.10.1985. Selvi P. S. R. Shanthi and Selvi Mary Leema Thilagam (II B. F. Sc.) were awarded the first prize in the Rangoli competition in 'Farmer' 85 at Tirunelveli Medical College on 20.10.1985. In the Turn Goat event Thiru A. N. Balaji got second prize. Tvl. A. N. Balaji and S. M. Ismail bagged the first and second prizes respectively in the group international understanding on 24.10.1985. The team lead by Thiru D. Sukumar was awarded the first prize in Quiz competition conducted by the Nagercoil Holy Cross College on 30.10.1985. The quiz team of Thiru D. Sukumar bagged the Balakrishna Rolling Cup in Quiz conducted by the Tuticorin Lions Club on 26.1.1986. Forty Students took part in hiking trip to Panchalankurichi on 27.3.1986.

Sports and Games

The teams of this College participated in friendly matches against Govt. Polytechnic College, Tuticorin Thermal Power Plant, Fire service Station of T.T.P. and Food Corporation of India. They won badminton and volley ball matches.

The College cricket team participated in the match conducted by Disco Cricket Club, played at V. O. C. College grounds.

Post Graduate Education

The details of number of post-graduate students admitted and passed out during 1985-86 are presented below :

Post graduate programme 1		Number of Students admitted 2	Number of graduates passed out 3
Coimbatore Campus			
M. Sc. (Ag.)			
1. Agronomy		22	15
2. Plant Breeding & Genetics		8	8
3. Entomology		9	6
4. Soil Science & Agrl. Chemistry		17	9
5. Agrl. Economics		14	12
6. Agrl. Extension		13	11
7. Agrl. Microbiology		9	10
8. Seed Technology		19	10
9. Crop Physiology		4	3
10. Agrl. Marketing Management		8	3
11. Plant Protection		20	2
12. Plant Pathology		3	2
13. Sugarcane Production		15	1
14. Farming system & Management		8	1
	Total	169	93
Madurai Campus			
M. Sc. (Ag.)			
1. Agronomy		7	9
2. Plant Breeding & Genetics		6	3
3. Agrl. Entomology		6	9
4. Soil Science & Agrl. Chemistry		7	1
5. Agrl. Economics		6	12
6. Agrl. Extension		9	2
	Total	41	36

1		2	3
1. M. Sc. Horticulture		3	9
2. Food Science & Nutrition		6	-
	Total	9	9
Tuticorin Campus			
M. F. Sc.		-	9
			9
Madras Campus			
M. V. Sc.			
1. Poultry Science		-	3
2. Therapeutics		-	4
3. Surgery		5	-
4. Obstetrics & Gynaecology		2	2
5. Veterinary Public Health Epidemiology		-	3
6. Meat Hygiene & Technology		5	-
7. Livestock Production & Management		2	3
	Total	14	15
II. Doctoral Programme			
Faculty of Agriculture			
1. Agronomy		11	5
2. Plant Breeding & Genetics		7	3
3. Agrl. Entomology		8	4
4. Plant Pathology		3	1
5. Soil Science & Agri. Chemistry		7	6
6. Agrl. Economics		3	4
7. Agrl. Extension		5	4
8. Agrl. Microbiology		-	1
9. Crop Physiology		2	1
10. Environmental Biology		-	2
11. Seed Technology		3	-
	Total	49	31

1	2	3
2. Faculty of Horticulture -		5
3. Faculty of Veterinary & Animal Science, Madras		
1. Poultry Science	2	3
2. Therapeutics	2	-
3. Obstetrics & Gynaecology	-	1
4. Meat Hygiene & Technology	4	-
5. Parasitology	-	2
6. Preventive Medicine	3	-
7. Veterinary Pathology	3	-
8. Veterinary Microbiology	2	-
9. Animal Nutrition	-	2
10. Dairy Science	-	1
11. Animal Genetics & Breeding	-	3
Total	16	12

UNIVERSITY LIBRARY

The Tamil Nadu Agricultural University has a well equipped library with an unique collection of scientific documents, both macro and micro, specialising in agriculture, horticulture, forestry fisheries, agricultural engineering and allied subjects, housed in a modern building with all the needed amenities. The library is open to all students and faculties of the University from 9 a. m. to 9 p.m. - Monday to Friday and 8 a.m. to 9 p.m. on Saturday an Sunday.

During this year, the library accessioned 1898 books and back volumes of journals and received 136 books as gratis. The library received 1,044 periodicals of which 882 were being subscribed. Out of these periodicals 568 were foreign journals and rest 314 were received on exchange basis for Madras Agricultural Journal and 132 journals as gratis. Pamphlets, leaflets and reprints, numbering 462 were also received by the library. At the end of the year under report, the library had 1,27,784 books and back volumes of periodicals.

The Library had arranged inter-library loan facilities among the Agricultural Universities and Research Institutes and other technical libraries in India and abroad on reciprocal basis.

During the year 6,301 issues of periodicals were received and displayed for the use of the readers in the current periodicals display racks. Three thou-

sand one hundred and seventy back volumes of periodicals were bound and added into the stack.

Documents, numbering 1648, were classified, catalogued and arranged in the stack of the library. Shelf register cards, subject cards, author cards, book cards and tracing cards were prepared for easy reference and charging work.

Research stations were supplied with xerox copies of important articales from current periodicals. The total output of xerox copies of scientific articles was 15, 169 pages. A decision was taken to send xerox copies of the title pages of the periodicals to the research stations to enable them to pick and choose the articles of interest for their research activities and also to up-date their knowledge. This will be implemented in the coming years.

Computerisation of subject bibliography was undertaken. Three hundred subject entries were fed into the computer and a pilot copy was obtained for editing.

The library was visted by 74,548 readers. They consulted 6,95,130 books and periodicals. The readers had taken 51,845 books on loan for home reading.

Twenty five classes on library management and effective use of the library were conducted for under graduates and Ph.D. students.

The Library Committee of Tamil Nadu Agricultural University met five times under the chairmanship of Dr. K. R. Ramasamy, Dean of Agricultural College, Coimbatore, during 1985-86 and discussed various issues connected with the development of library and its services.

Hon'ble Union Minister for Agriculture Sardar Bhuta Singh as the Chief Guest and His Excellancy Shri S. L. Khurana, the Governor of Tamil Nadu at the Eleventh convocation of the University.

Hon'ble Union Minister for Agriculture, Sardar Bhuta Singh going round the exhibition.

Dr. V. R. Nedunchezhian, Hon'ble Minister for Finance declared open the Water Technology Centre, Coimbatore.

Thiru K. A. Krishnaswamy, Hon'ble Minister for Animal Husbandary and Dr. K. Kalimuthu, Hon'ble Minister for Agriculture at the opening of Dairy Science Block at M. V. C., Madras.

Dr. K. Kalimuthu, Hon'ble Minister for Agriculture inaugurates Students' Club at Killikulam.

Students' Village Stay Programme at Pattanam Village. Salem District.

Dr. T. K. Kandasamy, Dean speaks during Club Day Celebration at AC & RI, Killikulam.

Our Vice-Chancellor addressing students during Club day of AC & RI, Killikulam.

Students cultural Programme during Club Day inauguration.

Annual sports day March Past by athletes.

Annual Sports Day at Coimbatore.

Dr. V. Rajagopalan, our Vice-Chancellor presenting Medal during sports festival.

Students receiving prize from District Collector at Killikulam for *securing first place in flower and powder Rangoli competition.*

4. RESEARCH

The major research achievements of the University in the areas of improvement, management and protection of crops, seed technology, horticulture, agricultural engineering, water technology, agricultural and rural development studies, veterinary and animal sciences and fishery science are presented in this chapter.

AGRICULTURE

RICE

Crop Improvement

Varieties Released

White Ponni Rice: This is a selection from White Ponni already under cultivation and this was released through genetic up-gradation from Tamil Nadu Rice Research Institute, Aduthurai. This is suitable for *Samba, thaladi* and *pishanam* seasons. This matures in 135-140 days and tall in stature (130-135cm) with wide adaptability. It has a grain yield potential of 4.5 t/ha with quality rice and high straw yield (7.4 t/ha). This is highly tolerant to yellowing syndrome with moderate resistance to brown spot and blast.

ASD 16 Rice : This is a derivative of a cross between ADT 31 and CO 39 from the Paddy Experiment Station, Ambasamudram. It is a semi-dwarf variety (88-97 cm) with a duration of 110-115 days. This is suitable for cultivation in *kar/kuruvai/sornavari* seasons throughout Tamil Nadu as an alternative variety to IR 50, TKM 9, ADT 36 and Rasi. This can also be cultivated during late Pishanam season. It has a grain yield potential of 5.6 t/ha with a high straw yield of 8 t/ha and high protein content of 10.24%. In addition, this possesses good cooking quality with high rice recovery percentage (70.2 - 71.3). This variety is tolerant to salinity and moderately resistant to sheath rot and brown plant hopper.

CROP MANAGEMENT

A study conducted at Coimbatore to evaluate the influence of neem products on IR 50 rice over recommended dose of N revealed that in *kharif* addition of fresh neem leaf at 5.00 t/ha yielded 6933 kg/ ha followed by dry neem leaf applied at 1.25 t/ha which yielded 6622 kg/ha. The neem cake treatment with N at 5:1 ratio recorded 6150 kg/ha. In *rabi* season also fresh neem leaf treatments gave the maximum yield (5454 kg/ha). The results indicated that neem leaf could be used in place of neem cake as a nitrification inhibitor to increase N use efficiency in low land rice.

Field investigation carried out on clay soil to study the effect of N and weed management systems in transplanted rice with Co 43 rice during *kharif* and *rabi* seasons indicated that skipping basal application of N either as urea, or neem cake coated urea or biogas slurry treated urea recoreed lower

yields. Application of N (120 kg N/ha) as *NCU*, 50% at planting and 25% each at tillering and panicle initiation stages, combined with pre-emergence application of butachlor at 1.5 kg/ha followed by a late hand weeding was found economical.

Studies conducted at Tirur on the optimum level of N for direct sown rice under upland conditions showed that application of 50 kg N/ha as top dressing on 45 to 60 DAS recorded the highest grain yield over the treatment, 50 kg N/ha applied as 50% basal and the rest as top dressing on 45-60 DAS.

Investigations carried out to assess the efficacy of pre-emergence application of herbicides revealed that when grass weeds were predominant in upland rice pendimethalin at 1.25 kg/ha or thiobencarb at 1.5 kg ha followed by one hand hoeing and weeding gave effective control of weeds and increased the grain yield. When broad leaved weeds were present pre-emergence application of pendimethalin at 0.75 kg ha or thiobencarb at 1.00 kg/ha followed by post-emergence application of 2, 4-D EE at 0.50 kg/ha gave an effective control with increased grain yield. None of the herbicides tried had any residual toxicity to the succeeding crop of cowpea or greengram.

Field experiment conducted in clay soils to quantify the losses of N due to volatilisation and leaching during *Kuruvai* '85 with different sources of N, *viz.*, prilled urea, LUC, NCU, CTU and combined application of green manure plus urea, revealed that the voltilisation losses ranged from 6.10kg N/ha (control) to 13.14 kg N/ha (urea split) application. All the coated forms and green manure +urea combination recorded lower volatilisation of N compared to prilled urea. Leaching losses of N was also maximum in the plots applied with prilled urea as basal and the least in the treatment green manure plus urea. The leaching losses were less when urea was applied in coated forms.

Loss of N due to leaching estimated in *Noyyal alluvium soil* during *rabi*, 1984-85 by using leachate probes indicated that the N concentration in the leachate water was highest at 112.5 kg N ha with prilled urea (5.39 ppm) followed by urease inhibitor coated N (4.41 ppm) and USG source of N (3.77 ppm).

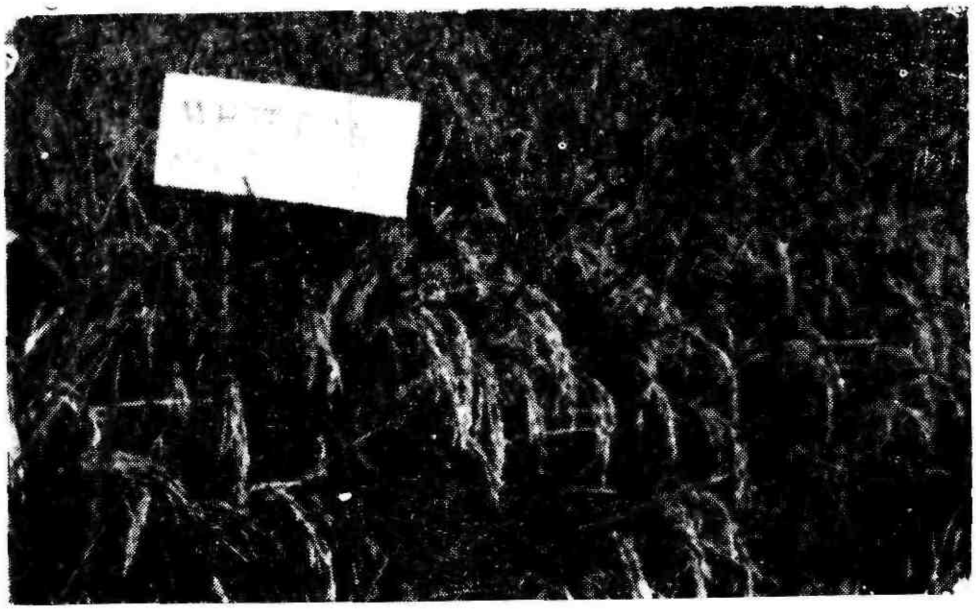
Results from Thirupathisaram indicated that for *semi-dry rice (TPS 1)* a seed rate of 100 kg/ha with the fertiliser dose of 75 : 45 : 20 kg NPK/ha was found optimum.

A study conducted at Thanjavur to identify the low yield of rice during *samba* and *thaladi* seasons in the Cauvery delta revealed that the soil available N status at tillering stage and the N content in Paddy plant at tillering phase, were correlated with yield giving 'r' values of 0.7366* and 0.8433** respectively and the linear prediction equations were as follows.

Soil available N status of tillering stage : $Y = -488 + 5.86x$

Plant N % at *tillering* phase : $Y = 93.17 + 889.62\,x$

The soil available N of 424 kg N/ha at tillering stage and N content of 2.14% in the leaf at tillering phase were found to be the optimum to get the rice yield of 5 t/ha from different



White Ponni

ASD 16

soil series. It revealed that the low yield was due to low N status of soil.

Crop Protection

The trial conducted at Madurai on the effect of synthetic pyrethroids in the control and resurgence of rice pests indicated that a higher population of BPH was noticed on 45 DAT. Treatments, deltamethrin 0.01% and 0.03%, monocrotophos 0.1%, deltamethrin 0.005%, cypermethrin 0.003%, recorded high incidence of 111.3, 104.0, 92.3, 79.7 and 74.9 insects / 10 hills when compared to untreated check, which recorded the lowest population of BPH throughout (15.0 - 34.3). As deltamethrin induced resurgence of BPH, this insecticide has to be avoided in BPH prone areas.

The multiple regression analysis between weather elements and rice leaf folder infestation indicated an unit increase in maximum temperature reduced the leaf folder damage by 0.45% and an unit increase in total rainfall reduced the damage by 0.06%.

Extensive survey taken up to record the natural enemies in different rice growing tracts of Madurai district revealed the predominent activity of *Platygaster* sp. from August to January. Parasitisation gradually increased from 10% in August to a maximum of 90.8% in January. Parasitisation was more in early sown crop. In addition stray cases of predation by carabid beetle, *Casomoides* sp. and two spider species were also noticed during December.

Field experiment followed by microplot experiments conducted at Coimbatore revealed that spraying neem seed extract @ 50 g/lit or soil incorporation of neem cake at 250 kg/ha followed by spraying neem cake extract 5 g/lit thrice on 35, 50 and 60 DAT were found to significantly reduce the stem borer damage. Spraying either neem oil (1 or 2%) or neem seed extract (5 or 10 g/lit) on 90 DAT was effective in reducing the earhead bug infestation by causing more than 60% mortality and it was on par with insecticidal spray of monocrotophos 0.05%.

Among the 47 cultures / varieties received from TRRI, eight cultures, *viz.*, TNAU 801793, 80042, 80058, IET 7303, AD 85002, IR 42, IR 54 and and White Ponni were resistant to rice tungro disease under controlled conditions. Five cultures showing moderate resistance to leaf folder and eight cultures showing resistance to brown plant hopper were susceptible to rice tungro disease.

Three short duration cultures, *viz.*, TM 10137, TM 10327 and BG 367 - 3 have been found to possess multiple resistance to stem borer, gall midge and green leaf hopper under field conditions and are moderately susceptible to leaf folder under screen house conditions. These three cultures have given better yields than ADT 36 and PY 3.

A total of 529 cultures / varieties resistant to brown plant hopper and 258 rice cultures / varieties resistant to leaf folder were screened at Coimbatore under green house condition.

MILLETS

SORGHUM

Crop Improvement

Variety Released

Co 26 Sorghum : This is a pedigree selection from the single cross MS 8271 x IS 3691. This recorded3000 kg of grain per ha which was 22.5% more than Co 24. Its average straw yield per hectare was 19 tonnes. Under irrigated condition its yield potential is 6000 kg per ha and under rainfed condition it is upto 4500 kg/ha. It is suitable for rainfed conditions during June - July and September - October seasons and under irrigated condition in summer and the maturity period ranges from 105 to 110 days. It is less susceptible to earhead bugs and has a high level of tolerance to shootfly, stem borer, sugary disease and head mould.

Crop Management

Fertilizer prescription equations for sorghum (black soil) are as follows :

$$FN = 7.06\,T - 0.81\,SN - 0.53\,ON$$
$$FP_2O_5 = 2.06\,T - 3.14\,SP - 0.720\,P$$
$$FK_2O = 3.73\,T - 0.20\,SK - 0.31\,OK$$

(Where F, S & O represent fertilizer, soil and organic nutrients in kg/ha respectively and T represents targeted yield in kg/ha.)

Physiological studies showed that higher leaf area, higher leaf area retention at harvest stage, high DMP and high earhead weight are the deciding factors of yield in the tolerant varieties under drought conditions. Co 19, TNS 24 and TNS 27 recorded higher grain yield and thus considered as drought tolerant varieties, while Co 20, K3 and Co 24 recorded lower grain yield and therefore considered as drought susceptible varieties. The susceptible varieties recorded low yield mainly due to low DMP and low harvest index with the exception of K3 which recorded high harvest index (28.33%). Thus the variety K3 recorded highest yield among the susceptible varieties.

Crop Protection

Yellow coloured sticky trap was found superior to others in attracting sorghum aphids and was followed by white sticky trap.

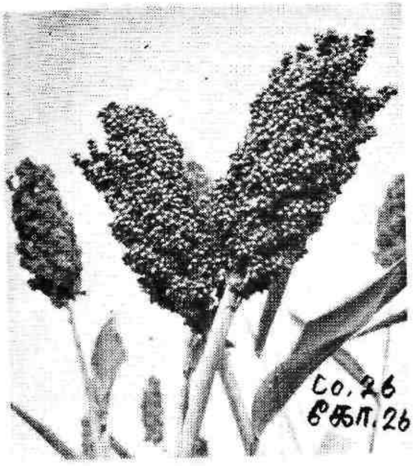
Two rounds of spraying thiophanate methyl 100 g or Captafol 1 kg/ha, one at boot leaf stage and the other a week later, reduced the incidence of sugary disease and increased yield.

CUMBU

Crop Improvement

Variety Released

CO 7 Cumbu : It was derived as a composite from the cross (Co 6xBK 560) x PT 192. It is suited for cultivation both under rainfed and irrigated conditions and meant to replace KM 2 and Co 6. The plant is 130-145 cm tall and matures in 95-100 days. It has uniform tillers and earheads, and grain size almost comparable to any hybrid. This new variety has a yield potential of 4815 kg/ha and 3850 kg/ha under irrigated and rainfed conditions respectively. The grain has high protein content and market acceptability. It is resistant to downy mildew, the dreaded disease. Being a composite, the seeds can be reused for three years.



Co 26 Cholam

Co 7 Cumbu

Co 3 Panivaragu

BSR 1 Redgram

RAGI

Crop Management

The effect of inoculation of *Azospirillum* and *VA-mycorrhizae* on finger millet (Co 11) revealed that combined inoculation of *Azospirillum* and *VA-mycorrhizae* on equal basis significantly increased the grain yield over uninoculated control at 45 kg P_2O_5/ha. The grain yield increased by 27.1%, 15.7%, 45.0%, in the treatments receiving *Azospirillum*, *VA-mycorrhizae* and *Azospirillum* + *VA-mycorrhizae* respectively over uninoculated control.

Crop Protection

The relative efficacy of new fungicides against ragi blast (rainfed ragi) tested at Paiyur for three years (1983-1985) revealed that the Kitazine treatment recorded the lowest incidence of blast (leaf-blast-3.3 grade, neck blast - 12.2% and finger blast - 2.9%) with the highest grain yield of 3081 kg/ha.

The root knot nematode, *Meloidogyne hapla* has been noted for the first time in ragi (*Indaf-9*) at Mettupalayam. The crop showed severe stunting with profuse tillering and non-production of earheads. Root system exhibited profuse fibrous root formation with mottled appearance. The galls were small and lateral roots were found developing on all sides from the galls.

MAIZE

Crop Management

The results of ORP field trial conducted at Valukkaparai indicated that chiselling of the subsoil hard pan increased the cumulative infiltration rate by 30 cm as against the unchiselled control field (3.22 cm), thus indicating the entry of water in soil with hard pan. Highest mean yield of grain was recorded in the chiselled plot (3272 kg/ha) and the lowest in the control plot (2104 kg/ha.)

The results of field experiment conducted in Zn deficient red sandy loam soil (DTPA-Zn = 0.38 ppm) of Agricultural Research Station, Bhavanisagar with Ganga 5 as test crop showed good response for the application of 50 kg $ZnSO_4$/ha. Combined addition of FYM and $ZnSO_4$ failed to have additional effect on yield. With regard to the method of application, soil application was found to be more beneficial than foliar spray of 0.5 % $ZnSO_4$.

PANIVARAGU

Crop Improvement

Co 3 Panivaragu: This was developed from a local collection (Oddarpalayam) in Coimbatore district. It mattures in 75-80 days with a stature of 65-70 cm. It is non-loding, tolerant to shoot fly and suited for September-October and February-March sowings. Being a very early maturing type, this can be used as an intercrop. It has given a mean yield of 1282 kg/ha which is 40% over Co 1 and 17% over Co 2.

PULSES

REDGRAM

Crop Improvement

Variety Released

BSR 1 Redgram: This is a selection from Myladumparai local and is found to be superior to other long duration varieties. The pods are large in size with fleshy and bold seeds and are

very tasty. It can be used for vegetable purposes. The dry seeds are bold with a protein content of 19.4%. It matures in about six months and can be maintained for two or three years. It can be raised as a shade crop in turmeric and as a border crop in sugarcane. The grain yield green) is two to three kg per plant which is double that of local varieties.

BLACKGRAM

Crop Management

The results of ORP field trial conducted at Valukkaparai indicated that chiselling of sub-soil hard pan increased the pod yield of blackgram (Variety-T9) by 648 kg/ha against the control plot yield of 396 kg/ha.

Seed hardening studies conducted at Kovilpatti revealed that soaking blackgram seeds for four hours coupled with rhizobium treatment and sowing in drylands on the receipt of rain resulted in higher grain yield (476 kg/ha). The sowing of non-soaked but rhizobium treated seeds gave only 311 kg/ha.

Crop Protection

Treatment of blackgram seeds with *Bacillus subtilis* offered effective protection against pre and post-emergence mortaility caused by *Macrophomina phaseolina*. *B. Subtilis* when used as cell suspension or for pelleting of seeds, reduced the pre-emergence mortality to 1.7% as against 23.3% in control. The *in vitro* studies also indicated that *B. Substilis* was inhibitory to the pathogen.

BENGALGRAM

Crop Improvement

Variety released

Co. 3. Bengalgram: This culture recorded a mean grain yield of 1200 kg/ha under All India Co-ordinated Traials as against Annagiri which gave 1024 kg/ha, i. e., 21.7% higher than Annagiri. It is resistant to root rot and moderately resistant to pod borer.

COWPEA

Crop Protection

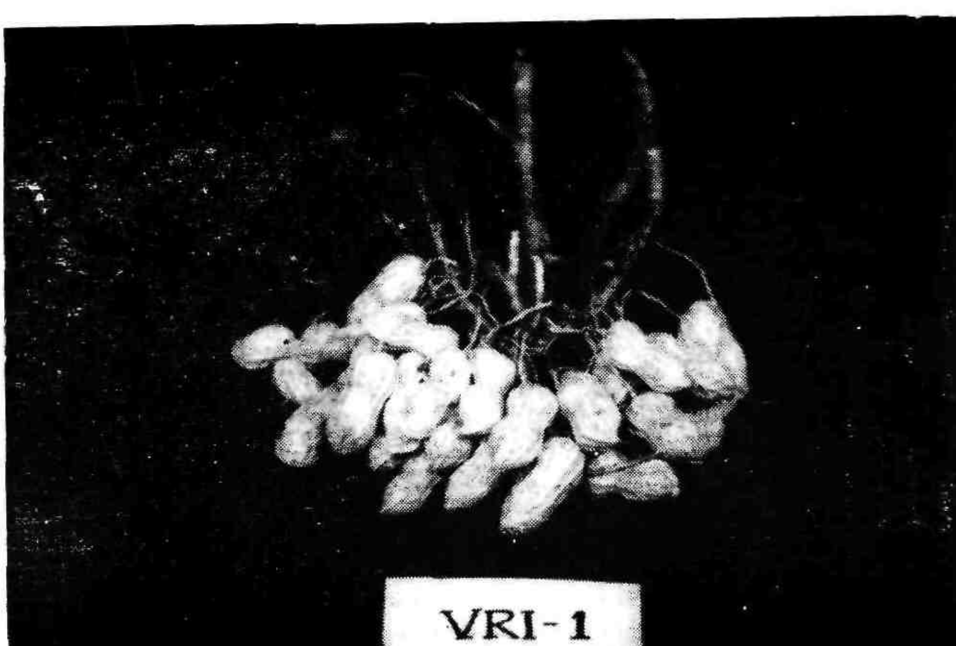
Carbendazim 0.1% and quintozene 0.1% were found effective in controlling root rot disease followed by TMTD and the percentage reduction in the disease incidence over control being 100, 100 and 84.6 respectively.

SOYBEAN

Crop Protection

A study on the influence of organic amendments and pesticides on root rot incidence in soybean revealed that neem cake reduced the root rot incidence sigficantly as compared to othar organic manures. The lowest incidence (2.9%) was observed in the combination treatment of neem cake + PCNB + carbofuran, followed by neem cake + PCNB + monocrotophos (4%) while the control plots recorded 25% root rot incidence. Corresponding to the decrease in disease intensity, neem cake + PCNB + Carbofuran and neem cake + PCNB + monocrotophos treatments increased the yield to 2963 and 2950 kg ha respectively compared to 1400 kg in the control.

Co 3 Bengalgram



VRI 1 Groundnut

Co 2 Sunflower

OILSEEDS

GROUNDNUT

Crop Improvement

Variety Released

VRI 1 Groundnut: It is a hybrid derivative of the cross TMV 7 x FSB 7-2. This culture recorded an average yield of 1590 kg/ha under rainfed and 1877 kg/ha under irrigated conditions and out-yielded Co. 1 by 40.3% under rainfed and 19.4% under irrigated conditions. It has given 17.5% and 3.7% increased yield over Co. 2 under rainfed and irrigated conditions respectively. The yield increase of this culture is also 22.9% higher than JL. 24 under rainfed condition. The shelling percentage is 74.4 and oil content is 48.14%.

Crop Management

Different weed control techniques were tested for controlling weeds in rainfed groundnut in light soils of Tindivanam. Of the different methods, using star-type mechanical weeder coupled with hand hoeing on 20 and 45 DAS gave significantly higher pod yield with higher net profits. However, it was on par with the farmer's method of hand weeding on 20 and 40 DAS.

The on-farm research trial conducted at Valukkaparai in Coimbatore district indicated that removal of sub-soil hard pan of bulk density 1.72 g/cc occuring at 45 cm depth with chisel plough at 0.5 m apart increased the cumulative infiltration rate by 30 cm as against the control field (3.22 cm). The mean pod yield of groundnut in the chiselled plot was 1844 kg/ha as against 1344 kg/ha in the unchiselled control plot.

The combination spray of DAP 5%, planofix 40 ppm, ammonium sulphate 0.2%, and boric acid 0.1% given twice during stray flowering (25 DAS) and peak flowering (35 DAS) increased the pod yield of JL 24 groundnut by 25% (1822 kg/ha) and in the control the yield was only 1269 kg/ha. The quality attributes like shelling percentage, natural test weight and oil content were also increased.

Application of chitin inhibitor (Dimilin) at 0.02% on 25th and 50th day after sowing registered lesser incidence of leaf miner (48.38 %) and it was on par with quinalphos 0.05% treatment (52.42%). The untreated check registered a mean leaflet damage of 98.04%.

SUNFLOWER

Crop Improvement

Variety Released

Co. 2 Sunflower: This is a derivative from the intermated progenies of seven single crosses of exotic origin. This variety matures in 87 days. It is 35 cm tall and has a higher yield potential than the ruling variety K 1 under varied agroclimatic conditions. It secured a mean grain yield of 1062 kg/ha as compared to 883 kg/ha in K1 representing an increase of 20.3%. The oil content was 37.44% as against 36.71% in K1. The incidence of rust disease was also relatively less.

COCONUT

Crop Improvement

The 'Kanyakumari Green' and 'Andaman Ordinary' recorded 17.57 and 17.53 kg of copra/tree and were superior to East Coast Tall which yielded 11.88 kg copra/tree. Kanyakumari Green possesses 41.5 functional leaves/tree and the leaves are dark green in colour indicating its superiority in photosynthetic

efficiency. The nuts are superior in respect of its low husk content, thick kernels and high copra content per nut than ECT.

Among the six varieties and three hybrids of coconut planted in July, 1973 at Coimbatore, the hybrids, Tall x Dwarf and Dwarf x Tall recorded cumulative yield of 439 and 362 nuts per palm respectively as compared to 209 nuts in the local tall upto February, 1986. The percentage of increase of nuts in Tall x Dwarf and Dwarf x Tall were 110 and 73 respectively. However, among the varieties, Laccadive ordinary gave the highest cumulative yield of 316 nuts per palm registering 51% increased yield over the local Tall.

Crop Management

In NPK fertiliser experiment with ordinary tall variety the dose of NPK at 1000 : 750 : 1750 g/palm/annum recorded the highest cumulative yield of 272 nuts per palm as against 107 nuts per palm in the control (NPK 0;0:0). The yield increase in the treatment was 165 nuts per annum.

COTTON

Crop Management

As an alternative to winter cotton in the gardenland croping system of Coimbatore district, differant crops were studied for the suitability and economics. Among the cropping systems, maize + cowpea followed by wheat + coriander gave the highest net return of Rs. 9902/ha compared to Rs. 6640/ha obtained for pure cotton. This was followed by the crop sequence of maize+ cowpea followed by pure wheat with the net return of Rs. 9622 ha. This sequence of maize+cowpea followed by wheat and coriander can be followed in garden lands where cotton cultivation is uneconomical.

Fertilizer prescription equations in conjoint with FYM have been worked out for cotton MCU 9 (mixedblack soil - Perianaikenpalayam series - Typic Usitivertept). The equations are furnished below and they can be used to tailor fertilizer prescriptions for specific yield targets (Need based fertilizer use).

$$FN = 8.810\ T - 0618\ SN - 0770\ ON$$
$$FP_2O_5 = 0.747\ T - 1.356\ SP - 0.022\ OP$$
$$FK_2O = 2.962\ T - 0.072\ SK - 0.226\ OK$$

(Where F, S&O represent fertilizer, soil and organic nutrients in kg/ha respectively and T represents targeted yield in q/ha).

Crop Protection

The whitefly *Bemisia tabaci* was observed in a pest form on cotton during 1985 in various districts of Tamil Nadu. This pest has never been a problem on cotton in the State before. Four field experiments conducted to test the efficacy of different groups of pesticides in the control of the pest revealed that the plant products, neem seed kernel extract 5% and neem oil 5ml/lit could reduce the pest effectively for seven days. Fish oil resin soap was also found to be equally good as that of neem products with high volume application using 1000 litres of spray fluid per ha; similarly the synthetic insecticides, endosulfan, phosalone, chlorpyriphos, quinalphos, cypermethrin and methyl demeton were also effective in causing mortality in immature stages only upto seven days after treatment

Spraying thrice with mancozeb (0.2%), iprodiane (0.2%) and captafol (0.2%) at 10 days interval from the initial appearance of *Alternaria* leaf spot was found to be effective.

Application of carbofuran 1 kg ai/ha on the 15th day of sowing gave control of reniform nematode by 26.8% and increased the yield by 34.9% in cotton variety Varalaxmi. The cost-benefit ratio was 1:3.

Application of neem cake (2.5 t/ha and farm yard manure (10 t/ha) reduced the pre-emergence and post emergence mortaility due to *Rhizoctonia solani*. Seed treatment with iprodiane or PCNB at 4 g/kg of seed reduced pre-emergence and post - emergence damping-off. Soaking the seeds overnight in the phenolic resorcinol at 800 and 1000 ppm conferred resistance against pre-emergence damping off.

The loss due to boll rot incidence was found to be 43.0%. Due to boll rot infecting fungi viz. *Aspergillus* and *Fusarium* sp. The quality of lint, especially fineness and bundle strength, were drastically affected. Wider spacing (90 x 30 cm) and low fertilizer dose (40 : 30 : 30) reduced boll rot incidence. Three sprays with carbendazim 0.1% in combination with synthetic pyrethroids like fenvalerare (75 g ai/ha) or cypermethrin (60 g ai/ha) effectively reduced boll rot infection when sprayed at 30 days interval starting from 55 days after sowing.

SUGARCANE

Crop Improvement

Variety Released

COSI 86071 Sugarcane : This is a cross between the sugar rich sugarcane variety Co 775 and high sugarcane yielding variety Co 842. It matures in 300 - 330 days with sparse flowering. It has high tillering capacity and performs well as ratoon also. In the early season it has registered an increased yield of 27% over CoC 671 and recorded 12.1% of C. C. S. In sugar yield this has given 14.0 t/ha as compared with 12.1 t/ha in CoC 671.

Crop Management

The results of seven trials conducted at farmers' holdings revealed that significant increase in cane yield was observed for the application of pressmud 5 t/ha or 37.5 kg $ZnSO_4$/ha or 100 kg Fe_2SO_4 in four locations (Nesankur, Sornavoor, Edayanvelly and Narayanapuram). The increase in cane yield over NPK control varied from 6.9 to 12.0 t/ha.

TOBACCO

Crop Management

Two field experiments laid out one at Olagadam and the other at Bhavanisagar in Kuppandapalayam (Fluventic Ustochrept-red sandy loam) and Irugur soil series (Typic-Ustorthent - red sandy loam soils) during 1985 to study the effect of zinc on tobacco showed that the application of 25 kg $ZnSO_4$/ha, and 0.5% foliar application of $ZnSO_4$ at 40th, 50th and 60th days recorded significantly higher yield (3.24 t/ha and 3.13 t/ha respectively) over NPK control (2.58 t/ha) in the vazhaikappal variety. The results are in confirmation with the results of the previous experiment conducted in Kuppandapalayam series (Fluventic Ustochrept-red sandy loam soil) at Olgadam, Bhavani taluk, Periyar district.

FORAGE CROPS

Crop Improvement

Varieties Released

Co 27 Fodder Cholam : The promising interspecific sorghum hybrid derivative FS 1 of Co 11 x *Sorghum halepense* was released as Co 27 fodder cholam. This has a yield potential of 44.5 t/ha in 55 to 60 days as the main crop and 24.5 t/ha as the ratoon crop harvested 55 days after the first harvest. The other endearing attributes are: sweetness of its stem with a brix reading of 7.4%' crude protein content of 9.8% and dry matter content of 24.2% with a digestibility of 65.8%.

Co 5 Fodder Cowpea : The high yielding cowpea mutant FCP 2 isolated from M_6 progenies of CO 1 irradiated with 30 Kr gamma rays was released as CO 5 fodder cowpea. It registered a green fodder yield of 18.2 t/ha in 50 to 55 days which is 32. % higher than CO 1. It has indeterminate growth habit, high crude protein content and calcium content with high leaf-stem ratio and high digestibility.

Crop Management

For a one-year crop of lucerne, application of 90 kg P_2O_5/ha along with the recommended levels of N at 25 kg/ha and K_2O at 50 kg/ha gave the maximum yields of green fodder, dry matter and crude protein. For two year crop of lucerne, application of 120 kg P_2O / ha in the second year along with the recommended doses of N and K each year gave the maximum yield of green fodder, dry matter and crude protein.

For the North-Western Zone, the mixture of BN 2 + Desmanthus in the ratio of 3:1 was found superior in green fodder yield. This crop mixture has given 122 t/ha of green fodder in six cuts taken in a period of nine months.

Among the cereal + legume mixtures, maize + cowpea in the ratio of 2:1 gave the highest biomass yield of green fodder both at Vellore (40.31 t/ha) as well as at Aruppukottai (32.71 t/ha).

SEED TECHNOLOGY

Sorghum

Sorghum seeds pelleted, prior to sowing (Co 24 and Co 25), with chlorpyriphos (Coraban) at 4 ml/kg of seed using adhesives gum arabica or rice gruel or sago gruel or castor oil to control shoot-fly attack can be safely stored for one or two months without damage to seed.

Soybean

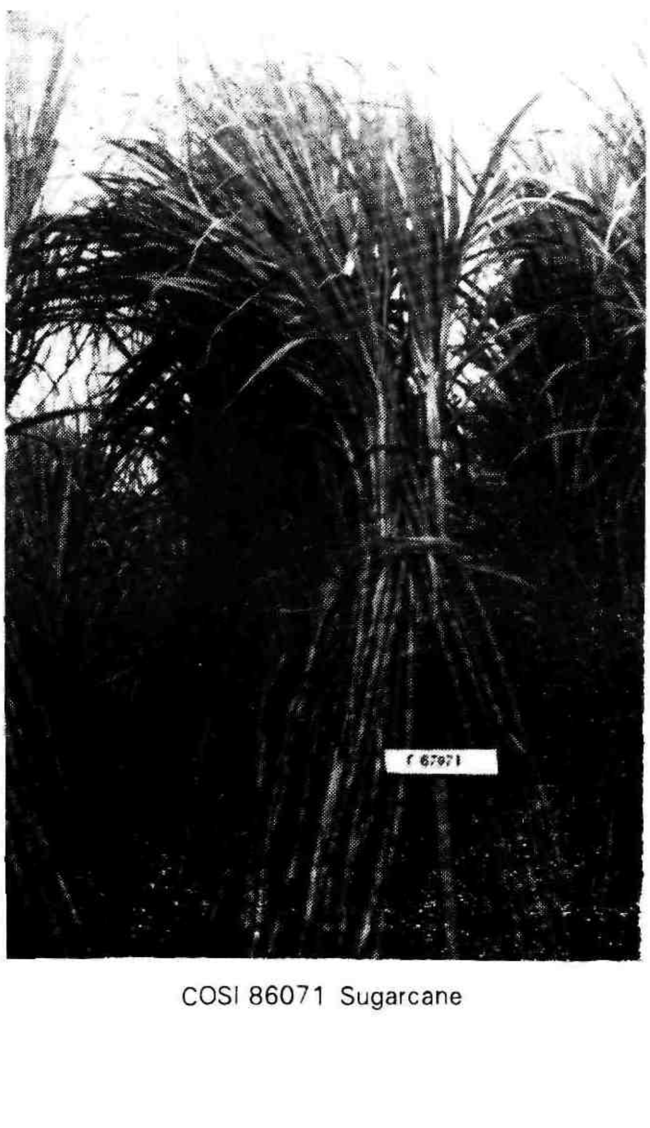
Storage studies with fifteen genotypes of soybean revealed the existence of genetic variability among genotypes for storability. Co 1 and Nimsoy can be safely stored for more than eight months in paper aluminium foil polyethylene laminated pouches after treatment with Captan 2g + 0.2g DDT / kg of seed. The seed crop of Co 1 soybean should be harvested 55 days after 50 % flowering for securing maximum quantity of quality seeds.

GROUNDNUT

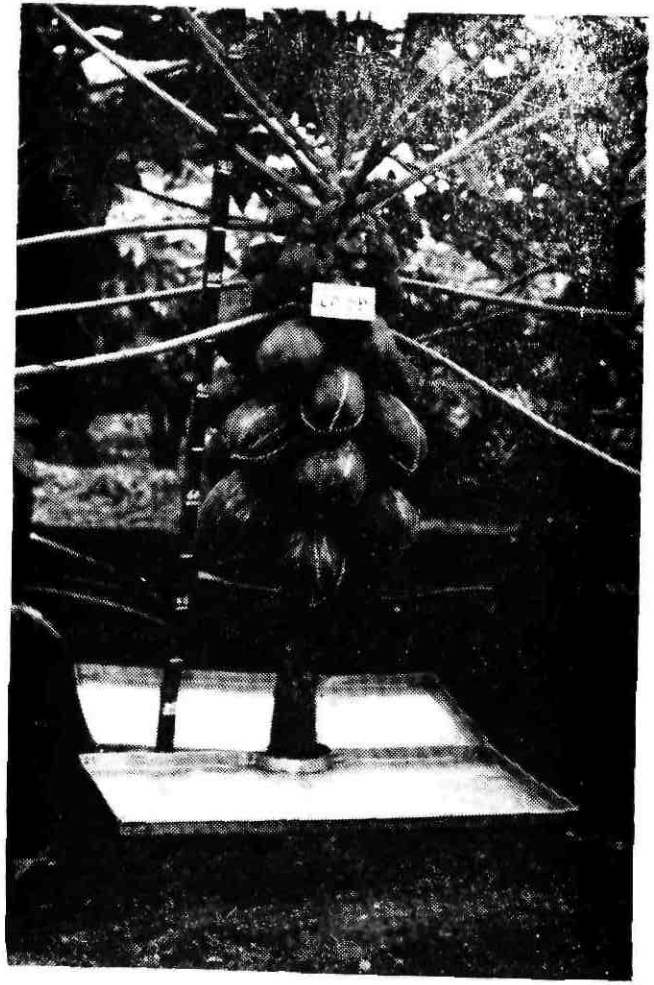
Herbicide application of Basalin @ 1 kg ai ha to groundnut POL 2 on seed production was detrimental to the seed crop in terms of yield and quality.

Co 27 Fodder cholam

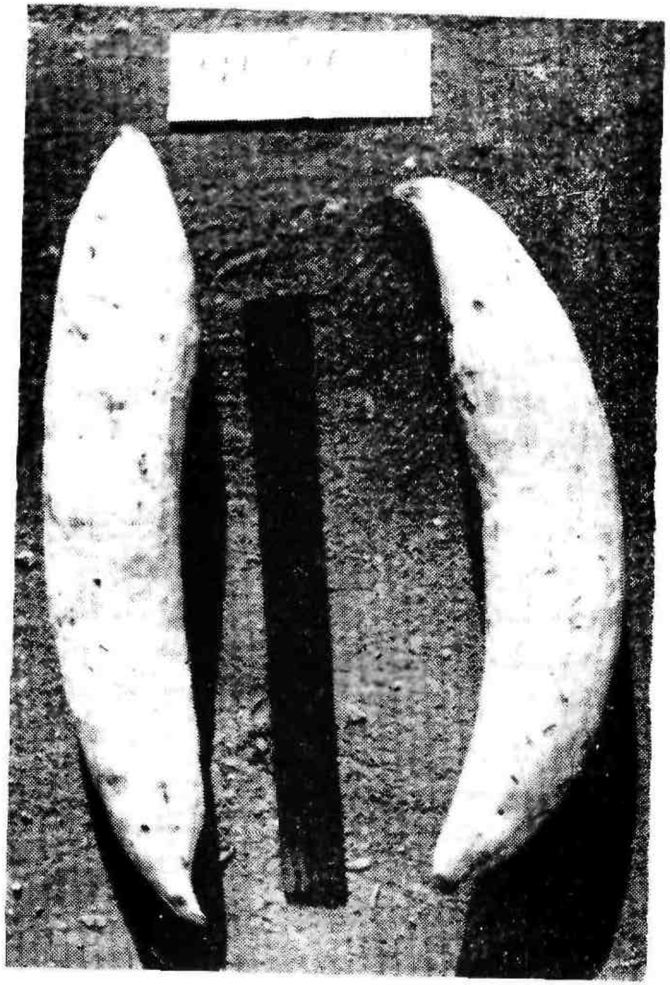
Co **5** Fodder cowpea



COSI 86071 Sugarcane



CO 6 Papaya



Co 2 Snakegourd

Basal fertilization of 30 kg N as urea and 10 kg P as DAP per hectare and 500 kg/ha of gypsum on 30th day after sowing proved ideal for high seed yield and quality for the seed crop of Co 1.

The seeds of Co 1 stored as such in pods were superior to those stored as shelled ones, and the seed from the single seeded pods were superior to those from the double seeded pods with respect to vigour and viability.

COTTON

Application of *Azospirillum* as seed treatment (500 g/12.5 kg of seeds/ ha + soil application (1.25 kg+741 kg of FYM/ha and applied on seed line) in combination with NPK @ 40-20-20 kg/ha improved the seed quality.

KAPOK

The study conducted with kapok on seed production and storage indicated the following : a) For planting, seeds should be collected from well matured fruits of 26 to 29 cm in length and 4.6 to 4.9 cm in breadth from trees of 15-20 years old and young trees should be avoided. b) At harvest, fruits should have split open at the pedicel end and contain seeds that are dark brown with hard coat and 8% moisture. c) For raising a nursery, moderately heavy seeds treated with 15% carbolic acid, a rodent repellent, should be used for sowing. d) For long storage, seed-should be stored in cloth bags at 6% moisture without scarification and pesticidal treatment. Acid scarified seeds should be treated with thiram @ 75% WP or activated clay before storage. e) Seeds should be pre-conditioned for 30 minutes with commercial H_2SO_4 before germination tests.

TOMATO

Soaking the seeds with indole acetic acid (100 ppm) and potassium nitrate (2%) for 16 hours and 48 hours respectively increased the germination percentage, seedlings establishment and subsequent growth of seedlings in the nursery.

Seed treatment with sodium phosphate (dibasic) at 10^{-4} soaking for three hours proved beneficial in extending the shelf life of old stored seed.

BRINJAL

The seeds extracted from the fruits of PKM-1 harvested at fully ripened yellow colour stage recorded the maximum germination and vigour followed by the seeds extracted from the fruits harvested at 2 3rd yellow stage. Seeds obtained from completely yellow coloured fruits recorded high 100 seed weight which was associated with higher percentage of seed recovery.

Seeds of MDU 1 brinjal treated with chlorocholine chloride (CCC) at 100 ppm resulted in higher germination (82%), seedling vigour (2.213) and seed yield (356 kg ha).

COFFEE

Pre-sowing soaking treatment of dehusked coffee seeds cv. San Ramon in 0.5% Potassium phosphate solution for 16 hrs followed by air-drying significantly improved the germination and vigour by 16% and 51% respectively.

Coffee seeds cv. San Ramon dried to 9% moisture content and packed in cloth bag with or without seed treatment lost viability within six months

under tropical and sub-tropical storage conditions and in nine months under temperate storage conditions.

HORTICULTURE

POMOLOGY

MANGO

Crop Improvement

An evaluation of four mango hybrids revealed that the hybrid Neelum x Mulgoa ranked first with 48.4 fruits/tree weighing 25.2 kg, followed by Neelum x Pottalma recording 53 fruits weighing 11.5 kg at the fifth year of age.

BANANA

Crop Management

The highest mean bunch weight of 23.1 kg was obtained in the spacing of 1.3 m x 1.8 m in the planted crop.

A growth regulator study in Robusta banana showed that the duration (from the time of treatment to harvest) was minmum in GA 100 ppm treatment (91 days), whereas the duration was extended upto 104 days in Kinetin 100 ppm treatment. The bunch weight was appreciable in both combination spray of three hormones (2, 4-D+GA+Kinetin) and 2, 4-D alone. The individual fruit weight and volume were also high in the combination spray of three hormones. The quality of fruit was improved by CA 100 ppm.

CROP PROTECTION

The nematodes were minimum both in soil and roots in the treatments, viz., a) paring+pralinage - 40 g of Carbofuran 3G at planting and b) no paring+ 40 g of carbofuran at planting. No paring+no chemical recorded the maximum nematode population.

A simple metallic chemical applicator has been designed with locally available materials to place the capsule containing fungicides inside the rhizome to control Panama wilt. This consists of a 45 cm long iron rod with a thickness of 7 mm, a handle at the top (15 cm long G. I. pipe of diameter 2.5 cm) and a resting plate of 9 cm length (3 mm thickness) fixed at 7 cm from the tip of the applicator. In this method, a hole was made with the help of the applicator in the corm region and the capsules containing 50 to 60 mg of bavistin was pushed in slowly to a depth of 6 cm and covered with soil. The capsule dissolves slowly and the fungicides were easily absorbed into the sysetm of the plant and they check the growth of the fungus.

GRAPES

Crop Management

A modified pandal system has been developed at Paiyur for training the vines over pandal. In the normal method of pandal erection, the supporting pillars are provided inside the pandal and the four sides are open, whereas in the modified pandal, the supporting pillars are erected outside the field. The G. I. wires in the periphery of the pandal are netted to the supporting pillars in an inclined fashion to the ground level, thus all the four sides are closed with an additional area to be trained over with grapes.

Crop Protection

The trial for the control of *Meloidogyne incognita* in Muscat grapes

with nematicides and Inter - planting with mustard revealed that carbofuran @ 65g/vine after pruning significantly reduced the root-knot nematode population upto 60 days after treatment and increased the fruit weight by 19%. The cost-benefit ratio was 1:4.

A study on the control of grapevine root-knot nematode conducted at Madurai revealed that Pungam seed powder at 0.50 kg/vine at the time of pruning reduced not only the root galling but also increased the yield.

PAPAYA

Crop Improvement

Variety Released

Co 6 Papaya: This selection serves as a dual purpose variety. It is a dwarf type coming to yield one month earlier than CO 2 and yields 27% more number of fruits and 92% higher quality of papain than CO 2.

CITRUS

Crop Management

The shelf life of acid lime fruits can be improved upto 10 days by dipping in 12% waxol solution followed by pre-packing in 200 guage polythene bags with one per cent vent. Such fruits exhibited a very low physiological loss in weight (0.83 to 1.0%) as against 11.17% in the control. Besides the total soluble solids, acidity and juice recovery remain unaltered. However, a decline in the ascorbic acid content was noted.

The evaporative cool chamber offers good scope for the extension of shelf life of acid lime fruits and the fruits kept inside the chamber recorded low physiological loss in weight (3.22%) as against 25.23% in the fruits kept in open.

Crop Production

Significant control of acid lime canker was obtained by spraying Agrimycin 100 ppm with 0.1% copper oxychloride thrice at monthly intervals.

The application of aldicarb 10G at 20 g tree or dimethoate 50 ml/tree was found to be effective in reducing the citrus nematode, *Tylenchulus semipenetrans*, population resulting in significant increase in total and per fruit weight though the difference in number of fruits obtained was not significant.

OLERICULTURE

TOMATO

Crop Management

Among the various levels of FYM applied to the tomato Cv. Co 3, the dose of 10 t/ha gave higher fruit yield of 247.5 q/ha which was 17.9% more than the control.

From another trial, application of 100 kg of N, 150 kg of P_2O_5 and 37 kg of K_2O per hectare was found to be the best combination to maximise the yield of CO 3 tomato, which was 74.5% higher than the control.

Pre-packing of PKM 1 tomato in 200 guage polythene bags with one per cent vent registered a three fold reduction in physiological loss of weight, thus preventing the loss due to shrivelling. After 12 days of storage under

laboratory conditions, 92.3% of fruits marketable as against only 63.7% in unpacked fruits.

CHILLIES

Crop Management

In chilli cv. K2, two sprayings of triacontanol 2 ppm + 2, 4-D 2 ppm + Boron 2 ppm at 15 days after planting and at full bloom stage recorded the highest yield of 5.36 t/ha of dry pods as against 1.75 t/ha in the control.

The optimum fertilizer requirement of chillies was found to be 120 kg of N and 60 kg of P_2O_5/ha. The fresh ripe pod yield was 11.16 t/ha for this fertilizer level.

SNAKEGOURD

Crop Management

Variety Released

Co 2 Snakegourd: The fruit is short (38-45 cm in length), greenish white in colour and has better consumer appeal and keeping quality. The crop duration ranges from 105 to 120 days with a mean yield of 35.81 t/ha as compared to 24.31 t/ha in the local thus registering an increase of 44.20%. This is suitable for closer spacing of 2 cm x 2 cm.

BHENDI

Crop Management

The effect of pre-sowing treatments on seed yield and quality as influenced by different chemicals and growth regulators revealed that Pusa Sawani seeds pre-soaked in 0.5% solution of Potassium dihydrogen phosphate before sowing showed significant increase in fruit yield, seed yield and seed recovery over the control.

AMARANTHUS

Crop Management

The optimum manurial schedule for Co. 3 (clipping) amaranthus has been arrived at as 10 t of FYM, 60 kg of N, 50 kg of P_2O_5 and 20 kg of K_2O per hectare. FYM, P_2O_5 and K_2O were applied as basal dose while N was applied in two splits, *viz.*, at sowing and eight weeks after sowing.

FLORICULTURE

MARIGOLD

Crop Improvement

Variety Released

MDU 1 Marigold: The variety gives a mean yield of 41.54 t/ha in a duration of 105 days as against 23.11 t/ha in the local in 114 days, accounting for an increase of 80%.

CHRYSANTHEMUM

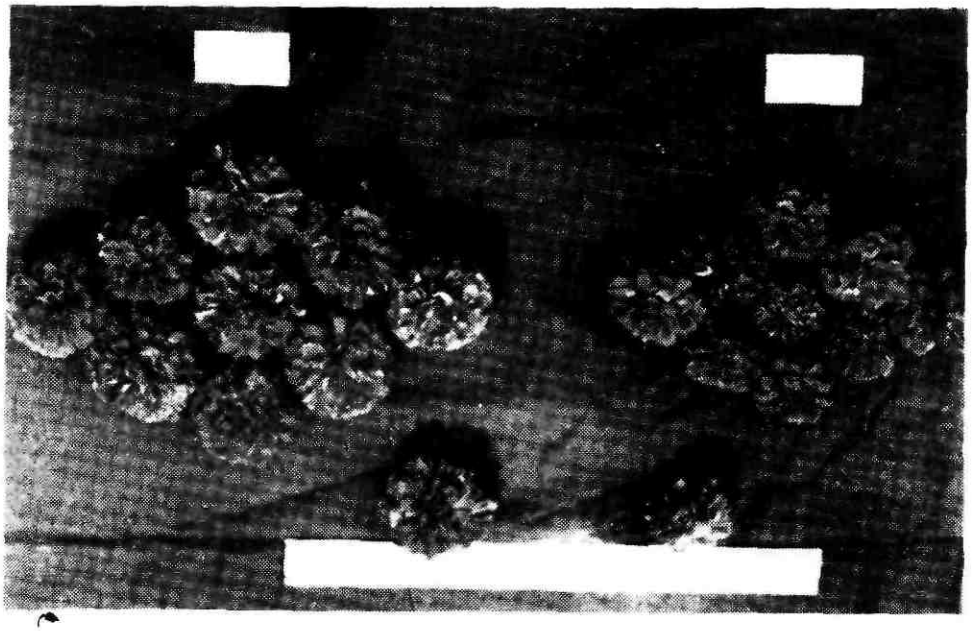
Crop Management

In Co. 1 Chrysanthemum, a spacing of 30 cm x 20 cm and pinching once in four weeks after planting recorded the highest flower yield of 16.68 t/ha in the main crop.

CROSSANDRA

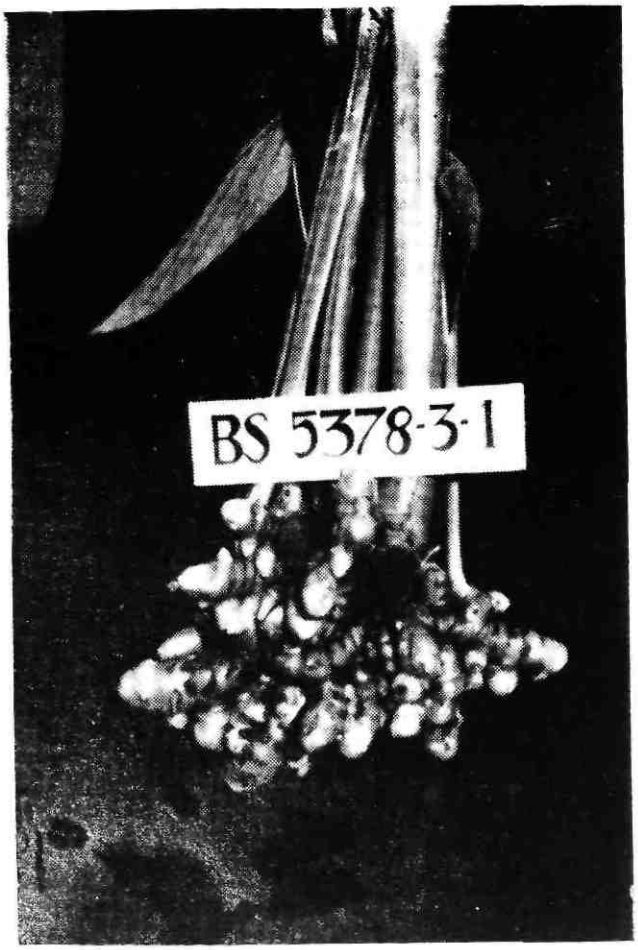
Crop Management

FYM (50 t/ha) applied at planting plus NPK 62.5:50:112.5 kg/ha applied in three splits during the 3rd, 9th and 15th month after planting plus zinc sulphate 0.5% applied as foliar spray once in 60 days from planting recorded the highest yield of 8.68 t/ha of flowers.



MDU 1 Marigold

Leafhopper Resistant Castor TMV 5 (Right) and susceptible
Castor TMV 4 left



BSR 1 Turme: c

TUBE ROSE

Crop Management

Application of 100 kg N, 75 kg P_2O_5 and 62.5 kg K_2O per ha recorded the highest flower yield (3578.6 kg/ha) as well as floral concrete recovery (0.279%). Half of the N and full dose of P and K were applied at the time of planting in the form of urea, super phosphate and muriate of potash. The remaining quantity of N was applied 45 days later.

SPICE AND CONDIMENTS

FENUGREEK

Crop Protection

In fenugreek, drenching twice, once at the initiation of the disease and another after one month, with Bavistin 0.1% or Brassical 0.1% is recommended for the effective control of root rot disease.

TURMERIC

Variety Released

Crop Improvement

BSR 1 Turmeric : This is a mutant and has recorded a mean yield of 31 t/ha of fresh rhizomes as against 25 t/ha in CO 1. The dry rhizome yield was 6.14 t/ha and 3.96 t/ha in BSR 1 and Co 1 respectively and increase amounted to 55.3%. It has higher curcumin content of 4.2% as against 2.3% in Co 1, and curing percentage of (20% in BSR 1 and 18.5% in Co 1). The per day productivity is 105 kg/ha and the duration is 280 days.

COFFEE

Crop Protection

Monocrotophos padding @ 1.0 ml/plant is significantly effective in controlling the stem borer and green scale infestation. The padding is useful only when it is preformed during the initial stage of stem borer attack as a prophylactic measure and the treatment is effective for three months.

MEDICINAL AND AROMATIC PLANTS

GERANIUM

Crop Management

Rock phosphate has been found to be the best source of P for geranium. Application of P at 60 kg/ha in three split doses during the 1st week of May, July and September significantly increased the herbage and oil yields with a maximum of 9155 kg/ha as against 7650 kg/ha in the control.

The response of geranium to foliar spray of micro-nutrients like zinc, boron and molybdenum revealed that geranium responds very well for a combined spray of Zn, B and Mo at the rate of 0.1% + 0.1% + 0.05% concentration respectively. It recorded maximum yield of 21,525kg/ha of herbage as against 5,759 kg/ha recorded by control. The spray has also induced a higher oil recovery of 0,090% as against 0.085% in the unsprayed control.

PYRETHRUM

Crop Management

Picking of pyrethrum flowers at 14 days interval is the best for obtaining good yield of flowers of optimum stage of maturity (54.6%) as well as the dry weight of flowers (9.75 g). Picking at 28 days intervals gave only 41.7% flowers of optimum stage of maturity and 8.26 g dry weight respectively.

Pyrethrum required more iron and copper than zinc and managanese. The plant annually removes 223.5, 124.5, 82.8 and 199.5 g/ha respectively of iron, zinc, manganese and copper to produce 260 kg/ha of dry flowers.

DAVANAM

Crop Management

In Davanam, application of 125 kg N, 125 kg P_2O_5 and 75 kg K_2O/ha in three split doses at 25, 50 and 75 days after planting gave the highest herbage yield (12.57 t/ha) and essential oil content (0.375%).

FORESTRY

Crop Management

Studies to determine the optimal nursery seed rate for *Casuarina equisetifolia* indicated that while seedling attributes in terms of shoot extension, root length and collar diameter did not vary due to seed rate number of germinated seedlings per unit area declined beyond 10 g/m^2 after registering a progressive increase. A seed rate of 10 g/m^2 is therefore recommended for raising nursery of the species.

Studies conducted in a six year old plantation of *Casuarina equisetifolia* revealed that planting two seedlings/hill enhanced the economic yield per hill by 37%.

AGRICULTURAL AND RURAL DEVELOPMENT STUDIES

Regulated Market - Problems and Prospects

A study conducted on the operational aspects of Anamalai regulated market revealed that (a) nearly 69% of the farmers were aware of regulated market but only 10% actually sold their produce through regulated market (b) to bridge the gap between awareness and conviction on the part of the farmers, wide publicity on various advantages of regulated market was found essential and (c) the most serious problem was the wide gap between the revenue and physical targets (Market arrivals) achieved.

The study suggested the co-operative marketing societies should be encouraged to collect the produce and sell the same at the regulated market so that the complaint by farmers about price received or delay in payment might be avoided by providing sufficient infrastructural facilities by the co-operatives.

Study on the reorganization of village shandies

A study was conducted in three village shandies located at Attur. Tharamangalam and Valapady of Salem district. It suggested that facilities like stalls protected with compound wall, cart shed, cycle stand, water taps, water tub for cattle, toilet, slaughter house, tax collection shelters and electricity are to be provided to improve the functioning of the shandies, This would cost about Rs. 14.19 lakhs, Rs. 16.98 lakhs and Rs. 9.65 lakhs respectively for the selected shandies. In turn, the revenue as per the new market fee rates would be Rs. 3.50 lakhs Rs. 1.90 lakhs and Rs. 1.16 lakhs respectively. If the investment was made, the repayment period would be five years, 15 years and 15.5 years respectively while the B/C ratios worked out to 2.43, 1.14 and 1.16 respectively.

'Agmark' Products - Assessment

A study on the consumers' response to AGMARK products conducted in Coimbatore district showed that only 50% of the consumer respondents were aware of 'Agmark' products. There existed a wide gap between awareness and adoption among both rural and urban households. Lack of communication facilities, inadequate check sampling at the retail points, lack of pragmatic grading method for butter, high taxes on tin and comparatively high price associated with the graded products were the problems identified.

A study on equity in Periyar - Vaigai irrigation system

The results obtained from a study on methods for improving productivity and equity in Periyar - Vaigai irrigation system indicated that the water was not distributed uniformly over the entire system. The farmers in head reaches were able to harvest two crops in a year even when the entire system was facing water scarcity in times of drought. Estimated water production function for different reaches had shown that the additional flow of one cm of water at the middle and tail end would contribute to an increased yield of 14.20 kg and 6.00 kg respectively.

Production and marketing of tomato in Dharmapuri district

Marketing cost of tomato per quintal was found to be Rs. 12.50 in Dharmapuri district. It included Rs.5.50 for preparation to the market (44.00%), Rs. 3.66 for transport (29.28%) and Rs. 3.34 for market fee (26.72%).

Yield gap and production constraints in ragi crop in Dharmapuri district

A study conducted to find out the yield gap and production constraints in Dharmapuri district showed that more than half of the rainfed ragi growers adopt local variety while under irrigated condition the high yielding ragi (Co 7) was grown by 56% of the farmers. In order to increase the production of ragi crop production technologies need intensive popularisation; soil fertility in ragi growing areas need to be tested intensively and farmers may be made to follow the soil test recommendation for taking up ragi cultivation. Pest and disease management efforts need to be intensified, by giving forecast, preventive and control measures.

A study conducted in Sarkarsamakulam block of Coimbatore district on the adoption of biogas technology revealed that gramsevak was the major source of awareness for 72.50% of the farmers. Among the two models, *viz.*, TNAU and KVIC, TNAU model was followed by 96.67% of biogas users. The $4 m^3$ size was the most preferred one, and about 69% of the users had this sized plants. Less drudgery in cooking (58.33%) and saving in cooking time (42.50%) were the major reasons for going for biogas as reported by biogas users.

AGRICULTURAL ENGINEERING

Bullock drawn wide bed former

This equipment is capable of forming beds of 75 cm width on either side of the furrow in the first pass. During the second pass, a bed of 150 cm, width furrows on both sides of the beds, is made. During this operation another bed

of 75 cm (50 per cent of the second bed) is also formed. The weight of the unit is 52 kg with a draught of 40-50 kg. It can cover 2 ha/day. The cost of the unit is Rs. 200/-.

Seed-cum Fertilizer attachment to gorru

Crops like maize, groundnut, cholam, cowpea and bengalgram can be sown with this attachement. The unit costs about Rs. 1,100/- and can cover an area of 2.0 ha/day. There is a saving of 50% in sowing expenditure as compared to the conventional method.

Iron Plough

This improved iron plough has the following advantages:-

a) As and when the share wears off, it can be pushed forward and used. b) Since the share is fitted beneath the plough body the soil stick to the mould board during ploughing is minimised. c) The pole shaft angle can be easily adjusted in the field according to the height of bullocks and the desired depth of ploughing. d) Height of the handle above ground level can be changed suiting to the height of the operator anb e) It is provided with a mould board as an optional attachement which can be fitted to the plough when the soil in version is desired in the field.

This is capable of ploughing to a depth of 18 cm and width of 31 cm. By using this plough 0.50 ha can be covered in a day of eight hours. The cost of the plough is about Rs. 400/- including the pole shaft.

Process Development for making briquettes from agricultural wastes

A horizontal type extrusion briquetting machine has been developed to make hollow cylindrical briquetters from agricultural wastes like coir pith, rice husk, biogas digested slurry etc. The study on burning performance of briquettes has revealed that coir pith cowdung in the ratio of 6:1 is optimum. The capacity of the machine is 125 kg per hour and the cost of this unit is Rs. 10,000/-.

Substitute materials for burnt bricks

As an alternative material for burnt bricks stablished soil cement (5% cement), and soil-lime and soil-ash-lime blocks have been developed with a soil block machine for construction of farm structures. The soil blocks developed possess 30-45 kg/cm^2 crushing strength and less water absorption (15 to 18%). They are 40% cheaper than bricks.

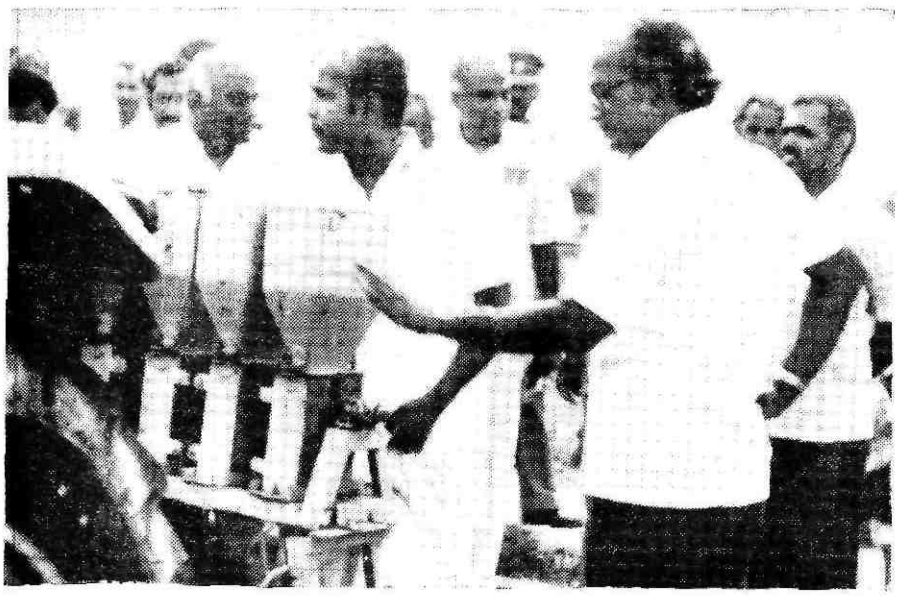
Sweet sorghum cultures for alcohol production

Alcohol recovery from 10 sorghum varieties was tested by extracting fermented substrate, which was subjected to distillation, and brix and sugar contents were studied. Among the varieties tested for alcohol yield, IS 19273 yielded alcohol with 52% purity. Neither the sugar content of the juice nor the brix number had any correlation with alcohol recovery. Alcohol extracted from different sweet sorghum varieties was tested for the refractive index in order to analyse the turbidity effect. The results indicated that the refractive index of the alcohol varied in the range of 1.3455 + 0.0125.

Dr. K. Kalimuthu, Hon'ble Minister for Agriculture and Dr. V. Rajagopalan our Vice-Chancellor at the Farmers' Day at Paddy Research Station, Tirur.

Dr. N. S. Randhawa. Director General, ICAR Visiting Millet Breeding Section at TNAU.

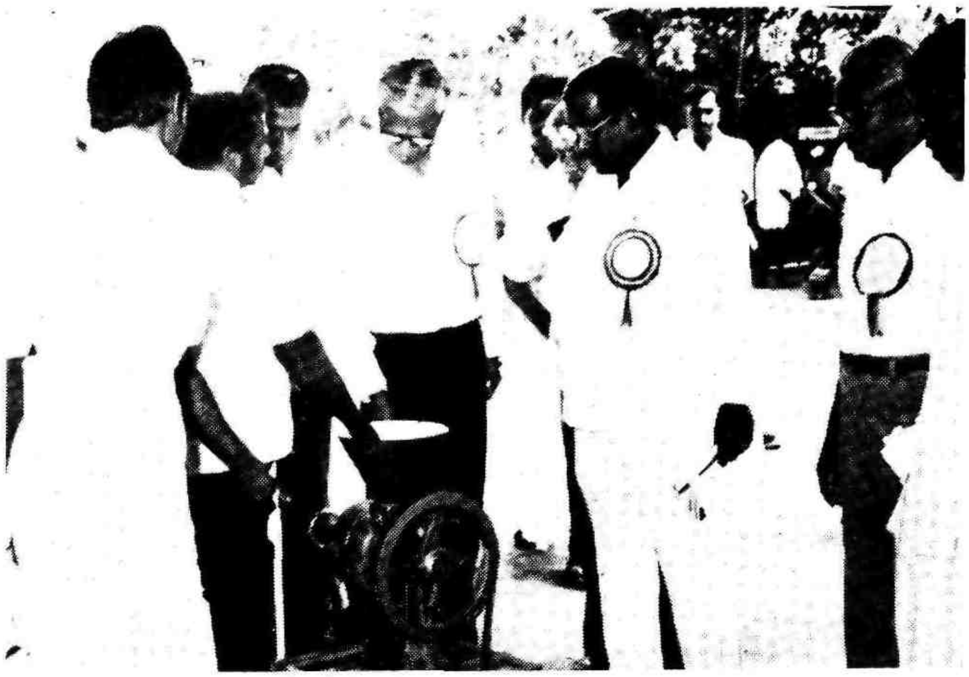
Dr. V. Rajagopalan, Our Vice-Chancellor inspecting A.R.S., Tindivanam.



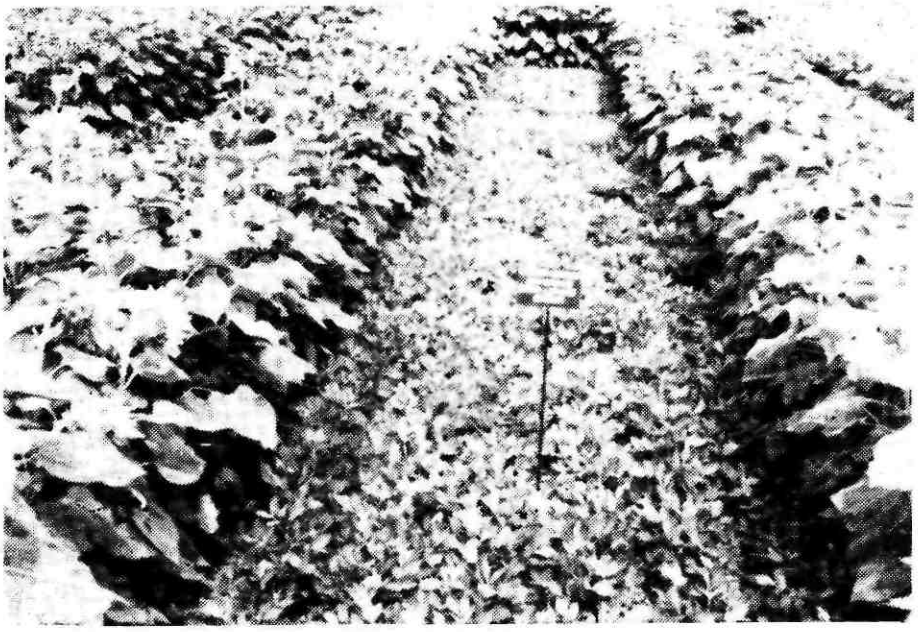
Dr. K. Kalimuthu, Hon'ble Minister for Agriculture visiting Farm Machinery.

Farmers' visit during Farmers' day at Coimbatore.

Farmers visit to cropping system Research.



Thiru Abdul Rahim, Member, Board of Management going round the Exhibition at AC & RI Madurai.



Intercrop of Pulse and Sunflower

Artifical insemination in Fowl.

Staff of Fisheries College examining whale in the sea shore.

Tapioca Seminar at Salem.

World Bank Team visiting ARS, Kovilpatti.

WATER TECHNOLOGY

Drainage studies conducted at Coimbatore, indicated that for poorly drained conditions, provision of 60 cm open drain at a distance of 20m across the slope resulted in significant yield increase of rice, registering an additional grain yield of 709 kg ha (16.4%) over the control (4283 kg ha).

Field studies carried out at the Parambikulam-Aliyar project command area showed that mismanagement of water by allowing copious amount resulted in the rise of water table and development of salinity. By adopting ponding techique and providing drainage channel, substantial quantities of salts (73.9 t/ha) could be flushed out thereby making the soil really productive. CO 43 paddy cultivated, adopting the above technique, gave a grain yield of 4600 kg/ha in the experimental site where the crop failed even to establish in the previous years.

Growth regulator study on rice under limited water supply carried out at Coimbatore showed that spraying cycocel at 2000 ppm at milking stage decreased the demand for water during the reproductive phase. Though there was a reduction in grain yield by 2% in summer and 6% in *Kharif* at this water requirement level (620mm), as compared to continuous submergence it resulted in substantial saving in water requirement.

Field experiments carried out at Bhavanisagar showed that irrigating IR 50 three days after the disappearance of ponded water registered significantly high grain yield of 5438 kg/ha.

Trials conducted at farmers' holdngs under the Operational Research Project in the LBP command area indicated that irrigating paddy to a depth of 5 cm water once in four days gave a yield of 6047 kg/ha in the study area and it also saved 150 mm of water as compared to the local irrigation practice.

Trials conducted at Thanjavur showed that nitrogen loss increased in both *Kuruvai* and *thadi* with increasing depth of submergence from 2.5 to 7.5 cm. Water loss by percolation also followed similar pattern as that of nitrogen.

Field trials conducted on the main crop of sugarcane revealed that irrigating the crop at IW/CPE of 0.90 registered the cane yield of 127 t/ha. Further, irrigation through gradual widening of furrow resulted in higher water use efficiency yielding a saving of 7% of total water requirement.

Trails conducted at Coimbatore indicated that in both summer and *kharif* seasons irrigating cotton by skipping life irrigatign and withholding irrigation after 126th day recorded higher kapas yield over the practice of irrigating the crop at 25% ASM. It also led to 14-19% of saving in irrigation water.

Studies on the adoption of sprinkler irrigation for cotton (MCU 5) showed that water consumption was 361 mm while the conventional method of irrigation consumed 610 mm.

Studies on the water repuirement of tree crops through drip irrigation revealed that for coconut 5-7 litres per day per tree was required in the first year and 8-12 litres in the second year. The water requirements for mango, Sapota and guava were five litres and

eight litres per day per tree in the first and second year respectively.

The results of the Operational Research Project on groundnut conducted at Bhavanisagar revealed that irrigating the crop at 5 cm depth registered a pod yield of 2031 kg/ha, while the control plots receiving irrigation to a depth of 9 to 10 cm recorded a pod yield of only 1589 kg/ha.

Trails on sprinkler system of irrigation for groundnut at Bhavanisagar showed that irrigating the crop to a depth of 3 cm at 0.6 IW/CPE ratio gave significantly higher pod yield of 1878 kg/ha over the flow irrigation with 5 cm depth of water at the samc IW/CPE ratio, which recorded only 1557 kg of pods/ha.

SERICULTURE

The larval growth, shell weight and silk weight were statistically significant in Azotobacter + Azospirillium application with 75% of recommended nitrogen level to the mulberry crop.

The effect of mycorrhizae on mulberry crop was studied under pot culture condition. *Glomus mosseae* and *Glomus fasciculatum* were inoculated independently and in combination. The mulberry variety MR-2 responded well to the combined inoculation whereas M-5 responded well only to *G. fasciculatum*.

Evaluation of leaves harvested from different 'N' levels showed that larval length was maximum among the worms fed with M5 variety; whereas the larval weight was maximum in MR-2 variety. The cocoon weight, filament length and silk weight were maximum among the cocoon formed by the worms fed with MR-2 variety leaves harvested from the plots which received 400 kg of N per year.

A study on the affect of glycine on economic characters of silkworm revealed that the larval length, cocoon weight, shell weight were statistically maximum among the worms fed with mulberry leaves treated with 10 ppm level glycine daily once on first six days in V stage.

The experiment conducted with serine revealed that larval length-cocoon weight, shell weight and silk weight were maximum among the worms fed with leaves treated with 50 ppm level serine daily once from 4 to 6 days in V stage.

Studies on inter-cropping of mulberry revealed that mulberry plant height was maximum in the plots where the crop was grown as sole crop with an interspace of 60 cm x 22.5 cm. Mulberry yield was also maximum in plots where mulberry was raised as the main crop with an interspace of 45cmx30cm.

MUSHROOM CULTIVATION

Methods of mushroom cultivation

A new edible species, namely, *Pleurotus citrinopileatus* was collected from the dead wood in Lower Palneys near Kanalkadu. It was brought into pure culture and production technology was standardised. The yield obtained was 290 g per bed of 500 g of paddy straw substrate, which worked out to 58% bio-efficiency. The yield potential was similar to that of *P. sajor caju*. It could be cultivated easily following the poly-bag method of cultivation as in the case of *P. sajor-caju*.

They were of big size (8.2 cm) compared to *P. sajor-caju* (6.9 cm) and also suited well to the preference of mushroom growers.

Among the five different methods of cultivation of paddy straw mushroom tested, *viz.*, standard bed, hollow bed, out door method, box method and polybag method, the hollow bed recorded maximum yield with 18.7% bio-efficiency followed by standard bed and out door method which recorded 13.7% and 13.3% bio-efficiency respectively.

VETERINARY AND ANIMAL SCIENCES

Cattle and buffaloes

Large scale production technique of Aflatoxin under laboratory condition using toxigenic strains of *Aspergillus-parasiticus* was standardised. The Aflatoxin content of rice culture ranged from 48-350 ppm. The experimental feeding of Aflatoxin induced hepatitis in calves.

Control measures against arthropode infestations were evolved for different livestock farms in the State to ward off the infestation of arthropodes affecting livestock and poultry.

Rhinosporidiosis, a chronic infection of the nasal cavity characterised by polypoid growth, was identified endemic in Madurai, Ramanathapuram, Thanjavur, Tirunelveli and Kanyakumari districts. Among the affected cattle, 95% ot them were bullocks of above 4 years of age.

B. argentina infection in Bovines was identifiad in Madras city and this infection is a typical case of cerebral babesiois.

For the first time the abdominal radiography technique to diagnose abdominal disorders in bovines has been standardised. The study on heavy metal pollution in cattle revealed that the supplementation of copper and magnesium in the ration was essential to overcome the defects casued by the deficiency of these elements.

Sperm agglutinating antibodies (SAA) in serum and mucus were identified by performing tube slide agglutination test. About 60% of repeat breeder cows were positive for SAA in contrast to only 14.5% of regular breeders. Serum or serum and mucus or mucus was positive for SAA in 35.6%, 16.9% and 6.9% of repeat breeders and 11.6%, 2.9% and nil % of regular breeders respectively. High incidence of SAA in cervical mucus (23.8%) was noticed in repeat breeders in contrast to only 2.9% in regular breeders. The farmers may be advised to get their infertile animals checked for the presence of SAA before resorting to different types of treatment. Instead of indiscriminate breeding at frequent intervals, sexual rest for 2-3 oestrus cycle may help in reducing the concentration of SAA in cervical mucus and thereby help in conception.

It was found that pig manure could be incorporated in growing calf ration upto 20% level without any deleterious effect.

Serum samples of 87 cows and buffaloes aborted during 5th-8th month of gestation were screened serologically for the presence of infectious bovine rhinotracheitis (IRR) infection. Indirect haemoglutination (IHA) and serum neutralization (SN) tests were

applied. Twenty cows (22.9%) were found positive for IBR. Infection with the IHA titre ranged from 1:16 to 1:64. Six of the IHA positive for IBR infection were cross breds. It was also noted that one of the cross bred cows aborted twice successively during 5th and 6th month of gestation with the IHA titre of 1 : 256. It was clear from the above findings that IRR infection during the third stage of gestation may cause abortion in cross bred cows.

Mapping of mineral deficiency was done in Kancheepuram taluk with paddy straw. It showed that in 25% *selected villages* the Zinc content in paddy straw was less than the requirement. There was a general deficiency of copper in he paddy starw produced in this taluk which needs supplementation.

Sheep

Nutritive evaluation of *Gliricidia maculata* leaves was made using Tellicheri bucks. The leaves were rich in crude protein (20.58%). Average digestible co-efficient for DM, CP, EE, CF and NFE were 56.31%, 85.55%, 36.20%, 58.83% and 50.54% respectively. The DCP and TDN contents were 17.40% and 55.65% respectively with narrow nutritive ratio of 2.19. This forms a potential roughage source for adult native goats even when fed alone.

Anoestrus sheep during the breeding season were successfully synchronised for oestrus with vaginal sponges-Chronogest. with good lambing percentage.

Stud mating in sheep cane be adopted for controlling the mating by using selected rams. By this the fertility can be improved considerably.

Frequent cases of sheep scap (Psoroptic mange) seem to occur mainly in summer months when the animals are under great stress due to deficiency of succulent green fodder. When the lambs affected by sheep scab were treated for two weeks with external application of benzyl banzoate twice a week and oral administration of concentrated solution of Vitamin - A 50,000 I. U. at 0.5 ml / animal / week the rough, dry scaly skin and hyper keratinization were found to heal gradually and normal good hair growth was observed.

FISHERY SCIENCES

Culture of brine shrimp Artemia salina

In race way culture the animals were fed with rice bran (size of particles 40 cm). The growth of the animals were recorded for a period of *fifteen days* and it was found to be 0.55 cm to 0.55 cm.

Artemia nauplii were grown in the air-lifting systems, which were fed with rice bran of particle size 40 mm, and growth was recorded for a period of fifteed days and it was 0.6 cm on an average.

Artemia nauplii were collected and reared in the laboratory. These nauplii were fed to juvenile common carp fishes of average 20 g size. A control was also maintained. Daily ration of 3 g of nauplii was conducted for 50 days. It was found to have a growth of 33 g.

The adults - Artemia - were fed to the common carp fishes-daily ration of 3 g per fish of 20 g size. The growth of fish for fifteen days was calculated which was 25 g on an average.

Brackishwater-pen culture

The brackishwater environment at Pullavali was found to be suitable for the cultivation of edible oyster species, *Crassostrea madrascueis.*

With a view to study the growth of brackishwater fish in single layered nylon net pens, two such pens were set up in Pullavali brackishwater site. The mesh sizes of webbings used as wells in these pens were 1.5 cm respectively. In the smaller meshed pen, polyculture of *Gerras filamentosus, Mugil sp.* and *Siganus canaliculatus* was attempted for a period of 60 days without supplemental feeding. The results are given below:-

Species	Stocking per ha	*Initial wt* Range & average (g)	Final growth (g)	Growth rate (g/month)
Siganus canaliculatus	20000	6.2 - 6.6 (6.4)	63.4 - 71.0	30.5
Mugil cephalus	10000	6.2 - 7.2 (7.0)	52.6 - 60.0	24.2
Gerras filamentosus	20000	4.5 - 4.8 (4.6)	30.0 - 32.8	13.5

Among the species cultured, *S. canaliculatus* was found to show better growth than the other species. This could be due to the rice blue green algae (*Entromorpha sp*) which was abundant in this brackishwater site and was known to serve as a major food source for *S. canaliculatus.*

Cages for fish culture

Cages of one m^2 size were designed and constructed. *Penaeus indicus* and *P. monodon* seeds were collected and stocked in them at a density of 50/m^2. The size of the seed of *Penaeus indicus* ranged from 1.850 - 5.578 g and P. monodon 2.750-6.100 g. The growth studies of these prawns in one m^2 cages showed that *P. indicus* have growth to a maximum of 22.400 g with an average of 18.440 g within a period of two months.

5. EXTENSION EDUCATION

The Directorate of Extension Education takes a lead in expeditious dissemination of innovations emanating from various research centres to the grass root level. The extension strategies adopted by its key centres during 1985-1986 are detailed below:-

Krishi Vigyan Kendras

The six Krishi Vigyan Kendras at Coimbatore, Madurai, Pondicherry, Trichy, *Vridhachalam and Kattupakkam* conduct on campus and off campus training programmes on agriculture and allied activities. A total of 440 training programmes was conducted and the beneficiaries included 11,440 farmers, 1665 farm women, 844 extension workers, 12 teachers, 1897 students and 766 other categories of personnel. In addition these centres carried out 308 demonstrations and 10 compact block demonstrations and also organised 10 biogas construction meetings, 60 village meetings, seven farm field days, five Farmers' Day, 636 farm advisory services and answered 1201 farmers' queries. In addition, 51 articles were published in dailies / farm magazines; 75 radio programmesand announcements broadcast; 11 TV programmes were Telecast; 53 slide/film shows and 37 exhibitions were organised by the Krishi Vigyan Kendras as part of their mass media utilisation activity.

Plant Clinic Centres

The staff of the five Plant Clinic Centres at Vellore, Kancheepuram, Tirunelveli, Salem and Srivilliputhur *periodically visit the farmers' holdings*, indentify the pest and disease problems and suggest suitable remedial measures. *These clinics also conduct* on - farm testing of pre-release culture of various crops, management practices and plant protection methods besides undertaking surveillance work for the purpose of forecasting the out break of pests and diseases.

The Plant Clinic Centres carried out 82 trainings. The beneficiaries included farmers (1748), farm women (216), extension workers (835), teachers (61), students (9) and other personnel (45). With respect to individual and group contacts, 72 demonstrations, 54 village meetings and four farm / field days were organised. Other major achievements related to carrying out 1542 farm advisory services and answering 250 farmers' queries. To supplement their extension activities, 38 articles in dailies and farm magazines, 31 radio broadcasts and 13 publications were brought out, besides organising 12 slide/film shows and two exhibitions for the benefit of the farmers.

Poultry Research and Development Centres

The Poultry Research and Development Centres at Madurai, Namakkal, Pudukkottai, Rajapalayam, Tirupur, Trichy and Vellore, undertook seven village meetings, 616 farm / field days, 3178 farm advisory services, answered 1788 farmers' queries and conducted 1500 postmortems and 23375 vaccinations for prevention of diseases.

Livestock Research and Development Centres

The Livestock Research and Development Centres at Dharmapuri, Erode, Nagercoil, Thanjavur and Tirunelveli examined 8547 clinical materials, conducted 348 farm visits and 1210 farm advisory services. They also conducted 143 postmortems and analysed 33 feed samples during the year 1985 - 86.

National Demonstration Scheme

The ICAR sponsored scheme at Salem organised target-oriented demonstrations (rainfed and multiple cropping) in farmers' holdings. During the period under report 24 multiple cropping demonstrations were conducted. To popularise the results, 12 articles and nine radio programmes were successfully brought out.

All India Coordinated Project on Scheduled Caste Area Research

The All India Coordinated Project on Scheduled Caste Area Research is now functioning at Aruppukkottai. The project aims mainly at improving the socio-economic conditions in various spheres of the scheduled castes besides taking efforts to remove the poverty amongst them. In this direction, the extension education activities that were carried out included 12 training programmes, 30 demonstrations, 15 village meetings, five exhibitions, three slide/film shows and one article in dailies.

Communication Centres

The two communication Centres, one at Coimbatore and the other at Madras Veterinary College disseminated the innovations of the University by way of publishing 174 articles in dailies and farm magazines, broadcasting 86 programmes, arranging 73 television programmes, brining out 1552 publications like leaflets, folders, etc., organising 1531 slide / film shows and answering 856 farmers' queries. In addition, four farm field days, one farmes' day and two training programmes benefiting 95 extension workers were organised.

Lab-to Land Programme

Under the Lab-to-Land Programme of the I C.A.R., 3500 farm families were adopted by the TNAU Centres during the current phase. The Krishi Vigyan Kendras at Coimbatore, Madurai, Pondicherry, Trichy and Vridhachalam were allotted 600, 600, 500, 500 and 400 families respectively. The Regional Research Stations at Paiyur and Aruppukkottai, Tamil Nadu Rice Research Institute, Aduthurai and Horticultural Research Station, Thadiyankudisai were also allotted 400, 100, 300 and 100 farm families respectively. Technical guidance and input support were rendered by the centres to the families on agriculture, animal husbandry, home science, agricultural engineering, sericulture, etc. The details of

input support made to the adopted villages are given below :

Paddy	—	39295 kgs
Other cereals / seed	—	1864 kgs
Pulses	—	6152 kgs
Oilseeds	—	8760 kgs
Coconut seedlings	—	1715 nos.
Vegetables	—	550 packets
Mango layers	—	550 nos.
Guava layers	—	267 nos.
Daincha	—	3486 kgs
Fertilizers	—	101.033 tonnes
Bio-fertilizer	—	1600 kgs
Pesticides	—	9176 kgs
Mushroom spawn	—	20 bottles
Farm implements	—	860 nos.
Plant protection equipments	—	35 nos.
Sheep and goats	—	682 nos.
Poultry chicks	—	60 nos.
Doves	—	100 nos.
Beehives	—	25 nos.
Deworming medicine	—	25 lit.
Guava layers	—	267 nos.
Smokeless Chulah	—	15 nos.

Other Centres

The colleges and research stations of the Tamil Nadu Agricultural University functioning in different parts of the State also attend to extension education activities through organising trainings, demonstrations, exhibitions and farmers' day in addition to farm visits on specific problems of farmers.

Distant Learning Programmes Farm School on AIR

The Communication Centre, Coimbatore covered the lessons relating to paddy cultivation, cattle feeds and their preparation, Integrated Weed Management and Dry farming under Farm School on All India Radio for which more than 2000 farmers had registered. The Communication Centre at Madras Veterinary College offered the course on cattle and poultry feeds. The lessons were also printed and supplied to the registered farmers. The contact programmes were held for one day at the main campus and regional stations for clarifying the doubts of the farmers and giving skill teaching. Certificates were awarded to all successful participants as a token of recognition and motivation.

Correspondence course

One of the most popular programmes of the Communication Centre among the farmers is the correspondence course. Lessons on Pulses, sericulture, dairy farming and agricultural implements and machineries were offered to 100 farmers.

Training Unit

The training unit of the Directorate of Extension Education had conducted 45 trainings of 6 days duration each in three batches for 992 T & V system functionaries. The topics covered were pest surveillance, bio-fertilizers, dry-farming, agronomy of millets, pulses, oilseeds, horticulture, rice and cotton, forage crop, agro - climatology, weed, water management, seed, technology and agro-forestry. Sixty pre-release defence personnel were trained in paddy and vegetable cultivation. Besides, training programmes were organised for IAS probationers, Co - operative Deputy Registrars and Animal Husbandry personnel.

The details of the number of trainings conducted and kinds of beneficiaries are given in Table I.

Contacts

The number of group and individual contacts carried out by various extension agencies during the year are summarised in Table II.

Information support

The various extension centres gave *information support in various forms* besides publishing monthly and quarterly journals. The details are given in Table III.

Table I. No. of trainings offered by TNAU extension centres (1985-86)

S. No.	Centre (s)	No. of trainings	No. of beneficiaries					
			Farmers	Farm women	Extn. workers	Teachers	Students	Others
1)	KVK, Coimbatore	26	492	191	58	—	—	193
2)	KVK, Madurai	58	1700	53	92	—	—	150
3)	KVK, Pondicherry	81	1356	337	65	12	415	360
4)	KFSC, Trichy	125	3092	1021	629	—	1482	—
5)	KVK, Vridhachalam	134	4388	—	—	—	—	—
6)	KVK, Kattupakkam	16	412	63	—	—	—	63
7)	PCC, Vellore	7	—	—	—	—	—	—
8)	PCC, Tirunelvelli	28	360	—	300	—	—	—
9)	PCC, Kancheepuram	21	370	141	115	60	—	—
10)	PCC, Salem	23	950	75	390	—	—	45
11)	PCC, Srivilliputhur	3	68	—	30	1	9	—
12)	NDS, Salem	4	45	95	9	—	—	3
13)	RRS, Paiyur	37	4942	400	3285	—	430	—
14)	RRS, Aruppukkottai	12	249	49	—	—	—	—
15)	HRS, Thadiyan-kudisai	20	350	230	40	20	90	210
16)	TRRI, Aduthurai	5	1385	85	—	—	—	—
17)	Communication Centre, Coimbatore	2	—	—	95	—	—	—
	Total	602	20159	2740	5108	93	2426	1024

Table - II. **No. of individual / group contacts conducted by TNAU extension centres**

S. No.	Centre	Demonstrations	Compact Block demons.	Biogas const. Mtg.	Village Mtgs.	Farm/Field day	Farmers' Day	Farm Adv. service	No. of queries answered
1	KVK, Coimbatore	147	—	10	24	5	1	116	296
2	KVK, Madurai	78	—	—	3	2	1	28	82
3	KVK, Pondicherry	24	10	—	13	—	2	119	176
4	KFSC, Trichy	31	—	—	20	—	1	353	615
5	KVK, Vridhachalam	15	—	—	—	—	—	—	—
6	KVK, Kattupakkam	13	—	—	—	—	—	20	32
7	PCC, Vellore	8	—	—	7	—	—	57	6
8	PCC, Tirunelveli	28	—	—	25	—	—	326	35
9	PCC, Kancheepuram	9	—	—	9	—	—	685	145
10	PCC, Salem	21	—	—	13	4	—	255	—
11	PCC, Srivilliputhur	6	—	—	—	—	—	219	64
12	NDC, Salem	29	—	—	—	—	—	—	—
13	RRS, Paiyur	34	—	—	15	5	1	35	86
14	RRS, Aruppukkotai	30	—	—	15	—		—	—
15	HRS, Thadiyankudisai	20	—	—	20	3	—	85	155
16	TRRI, Aduthurai	106	—	—	37	42	2	14	212
17	Communication Centre. Coimbatore	—	—	—	—	4	—	—	700
18	Communication Centre Madras	—	—	—	—	—	1	—	150
19	PR & DC	—	—	—	7	616	—	3178	1788
20	LR & DC	—	—	—	348*	—	—	1210	—
		599	10	10	556	681	9	6700	4542

* Farm visits

Table III. No. of mass media utilisation programmes done by the TNAU extension centres

S. No.	Centre	Writing to dailies & farm magaz.	Radio prog./ announ.	T & V prog./ announ.	(Publications Leaflets, etc., brought out)	Slide / film shows	Exhibition
1	KVK, Coimbatore	13	14	—	10	1	9
2	KVK, Madurai	8	25	—	1	7	4
3	kVK, Pondicherry	20	26	—	3	28	20
4	KFSC, Trichy	2	5	—	5	5	4
5	KVK, Vridhachalam	1	5	1	21	—	—
6	KVK, Kattupakkam	7	—	10	2	2	—
7	PCC, Vellore	8	5	—	—	—	—
8	PCC, Tirunelveli	14	6	—	—	8	1
9	PCC, Kancheepuram	5	9	—	5	—	—
10	PCC, Salem	10	1	—	5	—	—
11	PCC, Srivilliputhur	1	10	—	3	4	1
12	NDS, Salem	12	9	—	1	—	—
13	RRS, Paiyur	10	—	—	—	2	—
14	RS, Aruppukkotai	1	—	—	—	3	5
15	HRS, Thadiyankudisai	8	2	—	3	12	5
16	TRRI, Aduthurai	42	20	3	17	4	4
17	Communication Centre, *Coimbatore*	173	85	73	1548	1531	—
18	Communication Centre, Madras	1	1	—	4	—	1
	Total	336	223	87	1628	1607	54

Valarum Velanmai

This is a Tamil monthly journal published by the Communication Centre, Coimbatore with 7432 annual and 2526 life members. It published 201 articles during the year under report. It released special issues on rural development and youth.

Kalnadai Kathir

This is a Tamil quarterly journal in Animal Sciences published from the Veterinary College, Madras. About 10,000 copies/year were printed and distributed to farmers and field personnel.

Uzhavar Thunaivan

The Agricltural College and Research Institute, Madurai brings out this Tamil monthly journal. It published about 106 articles during the year under report.

TNAU Newsletter

The monthly newsletter mirrors the latest research articles in brief and also activities and training programmes carried out by various wings of the University. Nearly 1100 copies were sent every month to various Agricultural Univerities, research Organisations and eminent Scientists in India and abroad

Breeder Seed Production

During the current year the total quantity of breeder seed produced on various crops was as follows.

crop	Quantity (kg)
Paddy	12,720
Sorghum	20
Ragi	14
Blackgram	11,260
Greengram	3,040
Redgram	700
Cowpea	720
Bengalgram	100
Horsegram	100
Lab lab	180
Groundnut	80,700
Gingelly	130
Vegetable	257
Total	1,09,941

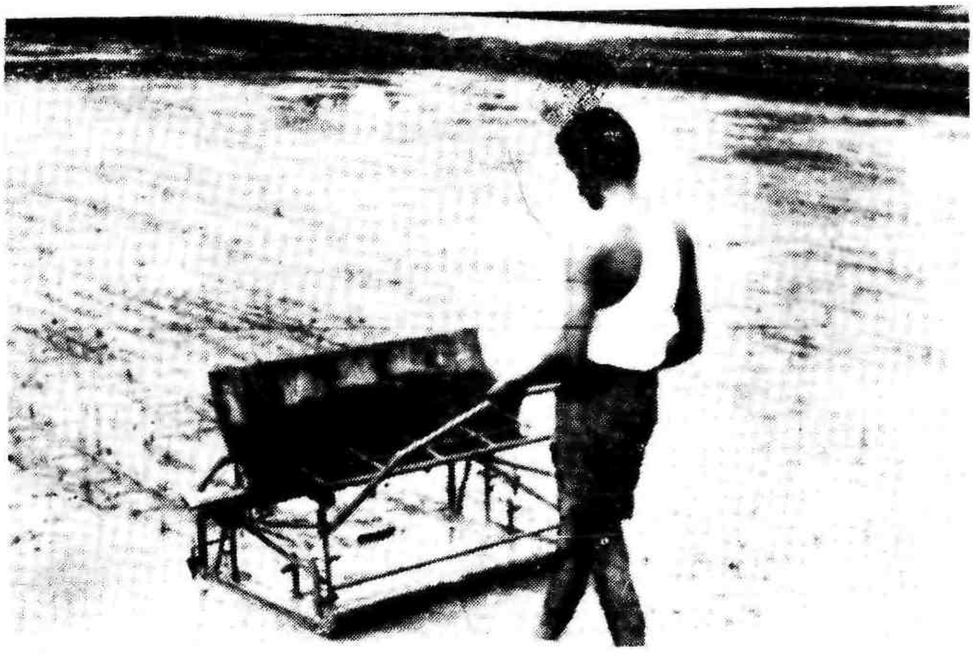
Adaptive Research/Multilocation Trials-II

During 1985-86, 37 cultures of 17 crops were evaluated in farmers holdings over 1086 locations. Besides, four rice tungro virus resistant cultures identified by the Directorate of Plant Protection were evaluated in farm trials in 55 locations in Thanjavur, Madurai, Tirunelveli, Chingleput, North Arcot and South Arcot districts.

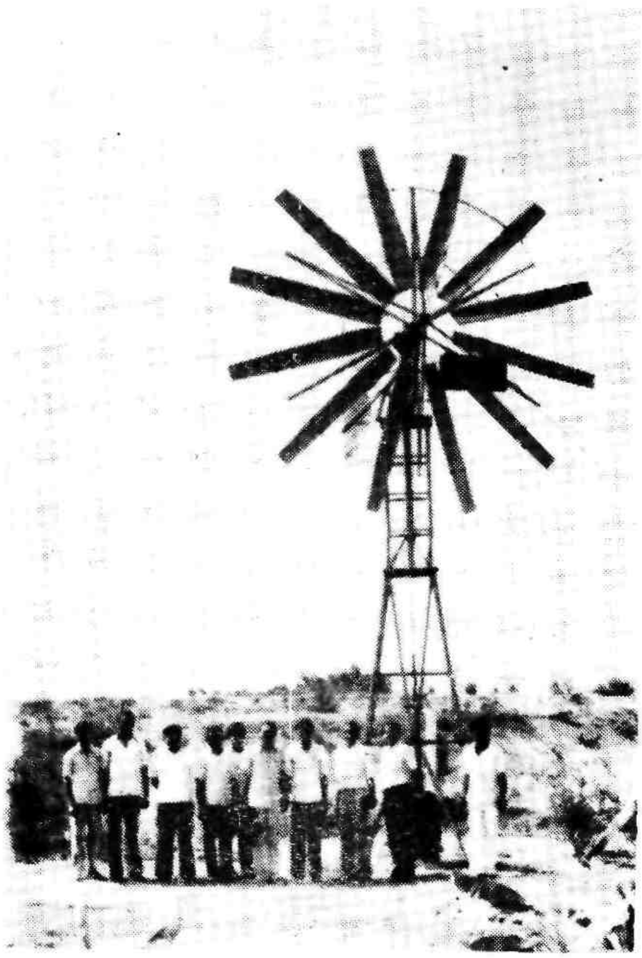
On - farm trials

On farm trials on Management Practices of paddy, millet, cotton, chillies and sugarcane were conducted in 2215 locations. It included latest agro techniques and plant protection aspect on various crops.

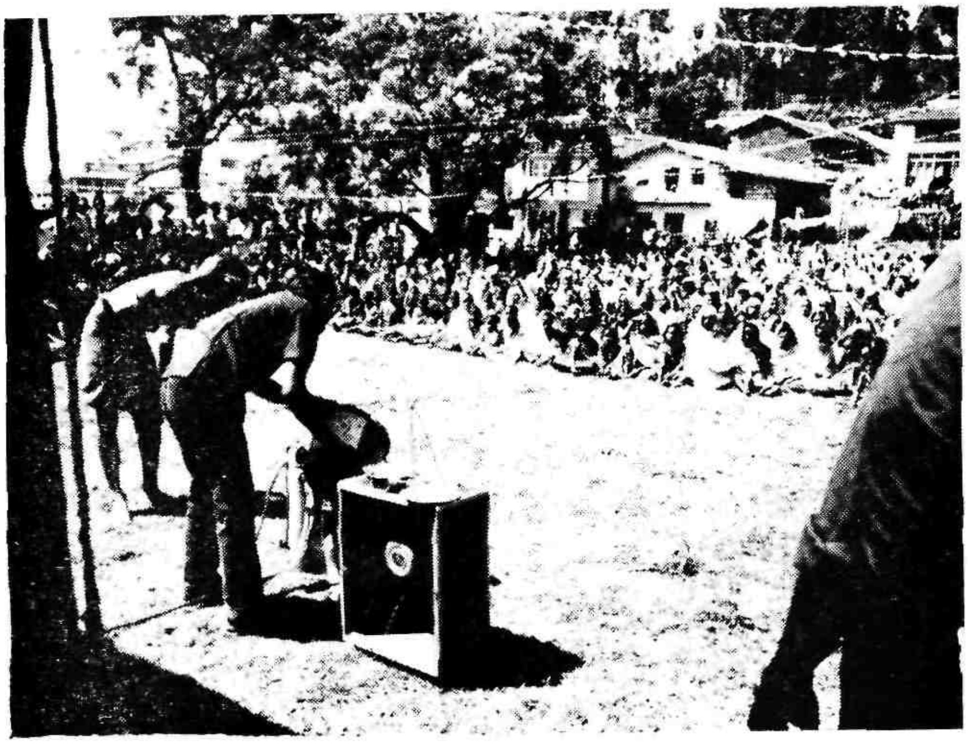
Off-campus training on raising BGA nursery.



Demonstration of Paddy transplantation.



Community Wind Mill at Selekarachai village.



Demonstration on safe use of pesticides by students at Nilgiris during Environmental Education and Awarness Campaign.

Demonstration of paddy harvester.

Pre-release defence personnel undergoing training in Tractor operation.

Lab to Land Farmers receiving sheep from our Vice-Chancellor

ANNEXURE

CIVIL WORKS COMPLETED IN 1985-86

I. Agricultural Research Station, Aliyarnagar

T & V Meeting Hall

II. Agricultural Research Station, Bhavanisagar

Shed for ICRISAT

III. Coimbatore

1. Ground level water Tank in Millet Breeding Station
2. Museum in Botanical Garden
3. KVC Teachers Hostel
4. Materials Science Building
5. Water Technology Centre

IV. Forestry Research Station, Mettupalayam

1. Rest House with two suites
2. Lab Building
3. Staff Quarters
   i) Teaching - 4 Nos.
   ii) Non-Teaching - 5 Nos.
4. Lab - cum - Lecture Hall - cum Exhibition Hall

V. Agricultural College & Research Institute, Madurai

1. Animal House
2. Glass House
3. Extension of Staff Club
4. Trainees Hostel for KVK
5. Concrete Benches to Hostel
6. Staff quarters (Home Science)
7. Intergrid irrigation

VI. Sugarcane Research Station, Melalathur

1. T&V Meeting Hall

VII. Madras Veterinary College, Madras

1. Communication centre
2. Canteen
3. Tick and fly proof
4. Material Shed Building
5. Sports cafeteria
6. Students' Hostel
7. Generator room

VIII. Poultry Research Station, Teynampet

1. Pellatizer room

XI. TRYCEM, Trichy

Trainees Hostel

X. Fisheries College, Tuticorin

Septic tank Hostel II

XI. Regional Research Station, Paiyur

1. Lab
2. Glass House
3. Rat Proof godown
4. Open shed
5. Cattle shed
6. Vehicle shed
7. Quarters (8 Nos)
8. Trainees Hostel

XII. Tamil Nadu Rice Research Institute, Aduthurai

1. Cattle & vehicle shed
2. Rat Proof godown
3. Thrashing floor
4. Quarters-
   1) Teaching - 2
   2) Non-teaching - 1

XIII. Cotton Research Station, Srivilliputhur

1. Lab
2. Green House
3. Cattle & vechile shed
4. Thrashing floor
5. Rat Proof godown
6. Quarters
   1) Teaching - 7
   2) Non-Teaching 1

XIV. *National Pulses Research Centre,* Pudukotai

1. Cattle shed
2. Rat proof godown

XV. Oilseeds Research Station, Tindivanam

1. Lab
2. Cattle shed
3. Thrashing floor
4. Open shed
5. Rat prof godown
6. Quarters
   1) Teaching - 5
   2) Non-Teaching - 3

XVI. *Regional Research Station* Vridhachalam

1. Rat Proof godown
2. Implement shed

XVII. Regional Research Station, Aruppukottai

1. Cattle implement shed
2. Thrashing floor
3. Rat Proof godown
4. Green House
5. Trainees Hostel

XVIII. Livestock Research Station, Kattupakkam

1. Thrash ng floor

XIX. Horticultural Research Station, Thadiyankudisai

1. Net house

APPENDIX - I

LIST OF SCHEMES

University Research Schemes - Non - Plan

		1985 - 86 Revised Estimate (Rs.)
1.	Scheme for Improvement of Groundnut through Induction of Mutation, Coimbatore	82,400
2.	Scheme for Surveillance of Pests and Diseases, Vellore	1,17,400
3.	Scheme for studies on the Residues of Pesticides in Plant and Soil, Coimbatore	1,82,600
4.	Scheme for Research on Citrus Die-back, Tenkasi	94,100
5.	Scheme for Research on Citrus Die-back, Coimbatore	45,900
6.	Scheme for Intensification of Pulses Research, Vamban	65,400
7.	Scheme for Improvement of Redgram and Soybean. Vamban	73,300
8.	Scheme for Evolution of Cumbu Resistant to Green ear, Vamban	1,07,400
9.	Scheme for Evolution of Cumbu Resistant to Green ear, Kovilpatti	1,34,900
10.	Scheme for maximisation of Pulses Production, Vamban	89,800
11.	Scheme for Improvement of Millets for Grain and Fodder, Kovilpatti	1,15,300
12.	Scheme for Improvement of Sunflower in Tamil Nadu, Kovilpatti	2,03,000
13.	Scheme for Improvement of Wetland Pulses, Aduthurai	1,10,000
14.	Scheme for Coordinated Agronomic Experiment on Sugarcane, Villupuram	2,33,700
15.	Scheme for Coordinated Agronomic Experiment on Sugarcane, Trichy	2,82,900
16.	Scheme for Research on Nematode Parasites of Sugarcane, Cuddalore	1,32,700
17.	Scheme for Biological Testing of Pesticides Laboratory, Vamban	7,100
18.	Scheme for Biological Testing of Pesticides Laboratory, Kovilpatti	60,500
19.	Scheme for Biological Testing of Pesticides Laboratory, Aduthurai	69'000
20.	Scheme for Biological Testing of Pesticides Laboratory, Tindivanam	32,100

UNIVERSITY RESEARCH SCHEMES - PLAN

1.	Scheme for Biological Control of Crop Pests, Coimbatore	20,000
2.	Scheme for Breeder Seed Increase, Bhavanisagar	2,02,500
3.	Scheme for studies on Standardisation of Seed Production and Seed Storage Techniques in Tropical Vegetables, Bhavanisagar	53,300
4.	Regional Research Station, Aruppukkottai	4,10,800
5.	National Pulses Research Centre, Pudukottai	3,24,300
6.	Scheme for Research on Heterosis breeding in Vegetable crops, Coimbatore	27,400
7.	Scheme for Strengthening of Coordinated Rice Entomological Research, Coimbatore	1,48,900
8.	Scheme for Strengthening of Coordinated Rice Entomological Research, Madurai	65,900
9.	Scheme for establishment of Plant Clinic Centre, Vellore	65,800
10.	Scheme for establishment of Plant Clinic Centre, Tirunelveli	74,700
11.	Scheme for establishment of Plant Clinic Centre, Kancheepuram	58,900
12.	Establishment of Plant Clinic Centre, Salem	84,200
13.	Establishment of Plant Clinic Centre, Srivillputhur	56,500
14.	Scheme for Development of Sugarcane varieties suitable for Southern Districts of Tamil Nadu, Madurai	1,07,400
15.	Scheme for Techno Economic Survey of the Different Districts of Tamil Nadu, Salem	1,41,000
16.	Scheme for the Development of Rice Varieties suitable for Periyar-vaigai River Project Area, Madurai	1,11,700
17.	Scheme for Research on Temperate Vegetables, Sandynallah	51,900
18.	Scheme for Research on Temperate Vegetables, Kodaikanal	36,500
19.	Scheme for Establishment of Regional Laboratory, Trichy	1,02,600
20.	Scheme for Establishment of Regional Laboratory, Paiyur	1,16,600
21.	Banana Research Station, Vellore	1,97,500
22.	Scheme for strengthing and Coordinating Rice Virus Diseases and Mycoplasma Diseases, Coimbatore	47,700
23.	Scheme for Strengthening and Coordinating Rice Virus Diseases and Mycoplasma Diseases, Madurai	70,300
24.	Scheme for Research on Bunchy Top Virus Disease, Thadiyankudisai	48,300
25.	Scheme for Research on Improvement of Chillies in the Southern Districts of Tamil Nadu, Paramakudi	1,22,000

26.	Scheme for Research on Potato Virus Diseases, Sandynallah	Kept in abeyance
27.	Scheme for Establishment of a Horticultural Complex, Kattupakkam	1,04,100
28.	Scheme for Research on the Improvement of Cultivation of Palmyrah Palm, Srivilliputhur	1,90,300
29.	Turmeric Research Scheme, Bhavanisagar	88,000
30.	Scheme for the Development of Economical Roofing Materials, Coimbatore	33,900
31.	Scheme for the operational Research Project on Efficient water Management Practices in Tankfed Areas, Kancheepuram	58,200
32.	Scheme for the operational Research Project on Efficient Water Management Practices in Tankfed areas, Aruppukottai	68,900
33.	Scheme for Development of Crop Pattern for Different Agro Climatic Zones, Coimbatore	1,45,700
34.	Scheme for Development of Crop Pattern for Different Agro-climatic Zones, Vellore	84,700
35.	Scheme for Development of Crop Pattern for Different Agro-climatic Zones, Tirunelveli	74,500
36.	Scheme for Development of Crop Pattern for Different Agro-climatic Zones, Paiyur	73,500
37.	Scheme for Development of Seed Technology Unit, Madurai	76,300
38.	Krishi Vigyan Kendra, Coimbatore	3,25,800
39.	Krishi Vigyan Kendra, Madurai	2,92,300
40.	Scheme for the Hybrid Development by Mass Production of Haploid and Homozygous plants in Hybrid Rice and Sorghum by Anther and Pollen Culture, Coimbatore	51,000
41.	Scheme for the Intensification of Research on Medium Staple Cotton Types, Srivilliputhur	59,900
42.	Scheme for the Intensification of Research of Medium Staple Cotton Types, Kovilpatti	57,100
43.	Scheme for the Intensification of Research on Medium Staple Cotton Types, Paiyur	41,900
44.	Scheme for M. Sc. Course in Plant Nematology, Coimbatore	17,800
45.	Scheme for Establishment of a Centre for Sericulture, Coimbatore	1,22,300
46.	Scheme for Starting of Post - graduate Diploma in Plant Protection, Coimbatore	1,64,500
47.	Strengthening of Research Stations Under National Agricultural Research Project	2,00,000
48.	Scheme for Evolution of High Yielding Crop Varieties Suitable for Lower Bhavani Project Area, Bahvanisagar	36,700

49.	Scheme for starting of *Post - graduate* Diploma in Horticulture (*Plantation Crops*), Thadiyankudisai	65,900
50.	Scheme for Strengthening Research on Chemistry of Submerged Soils of Thanjavur District, Aduthurai	45,100
51.	Scheme for establishment of Regional Lab, Yercaud	92,900
52.	Scheme for Establishment of an Uuit for Conducting Research Studies in Mycotoxin, Madurai	71,000
53.	Scheme for Research on Introduction of New Tree Species in Tamil Nadu, Coimbatore	21,900
54.	Scheme for Research on Introduction of New Tree Species in Tamil Nadu, Pudukkottai	18,000
55.	Scheme for Research and Development of Forage Crops, Coimbatore	48,700
56.	Scheme for Research and Development of Forage Crops, Tirunelveli	25,600
57.	Scheme to Evaluate Soil Crusting and Hardening problems in Tamil Nadu and Evolve Suitable Economic Soil Managment Practices, Vamban	39,600
58.	*Scheme for intensification* of Research on Soybean *Cultivation in Tamil* Nadu, Aduthurai	30,200
59.	Scheme for intensification of Research on Soybean Cultivation in Tamil Nadu, Paiyur	34,300
60.	Scheme for Strengthening of Coconut Research in Thanjavur District, Veppankulam	1,06,100
61.	Scheme for *Establishment of* Advanced Centre for Plant *Protection Studies, Coimbatore*	1,48,500
62.	Scheme for establishment of Advanced centre for Soil and Crop Management Studies, Coimbatore	87,100
63.	Scheme for Strengthening of the Training Division in the Directorate of Extension Education, Coimbatore	2,04,600
64.	Scheme for Research on Improvement of Coriander and vegetables, Aruppukottai	20,100
65.	Scheme for Strengthening Seed Production Programme, Kovilpatti	25,000
66.	Scheme for Socic - economic Studies on Tribal Welfare in the Lower Palani Hills, Thadiyankudisai	10,800
67.	Scheme for Studies on the Production Physiology on Rice, Madurai	61,800
68.	Scheme for Establishment of Wetland Banana Research Station, Sirugamani	31,100
69.	Scheme for Establishemt of Agricultural Research Station, Vellore, North Arcot District	1,72,000
70.	Scheme for *strengthening* Estate Office, Coimbatore	1,69,600

71.	Scheme for starting of M.E. (Ag) Degree Programme in Post-harvest Technology, Coimbatore	2,500
72.	Scheme for Studies on Materials and Methods of Farm Structures, Coimbatore	38,600
73.	Up-gradation of TRRI, Aduthurai and also Reorganisation of the Directorate of Research	1,11,500
74.	Agricultural College, Killikulam	20,00,000
75.	Scheme for Studies on the Nutritive value of New varieties and their Changes due to Modern Agricultural Processing Technology, Madurai	26,900
76.	Scheme for Research on Introduction of New Tree Species in Tamil Nadu, Mettupalayam	49,000
77.	Scheme for vegetable Seed Production, Palur	66,500
78	Scheme for Popularisation of Agricultural Implements through Krishi Vigyan Kendra, Coimbatore	38,300
79.	Scheme for Popularisation of Agricultural Implements through Krishi Vigyan Kendra, Madurai	50,700
80.	Scheme for Evolution of Medium Staple cotton Suitable for Black Soil Rainfed Tracts of Southern Districts, Kovilpatti	44,600
81.	Scheme for Evolution of Forage Crops Suited to the Milk Shed areas of North-eastern Districts of Tamil Nadu, Vellore	56,500
82.	Scheme for Improvement of Minor Pulses and Synthesising Hybrid Varieties of Sesamum, Coimbatore	1,13,900
83.	Scheme for Studies on the Indigenous Pesticides of Plant Origin, Coimbatore	25,200
84.	Scheme for Establishment of Rural Observatory, Coimbatore	55,000
85.	Scheme for Seed Production and Seed Storage Studies in Sub-tropical and Temperate Crops, Periyakulam	77,000
86.	Scheme for Improvement of Groundnut suitable for Rainfed Area, Tindivanam	53,500
87.	Project on Integrated inter-disciplinary collaborative Rasearch on Sorghum, Madurai	52,500
88.	Scheme for Genetic Improvement of Honey Bee, Yercaud	56,500
89.	Scheme for integrated Weed Management in Different Cropping System, Vridhachalam	25,200
90.	Scheme for Integrated Weed Management in Different Cropping System, Kovilpatti	36,100
91.	Scheme for Integrated Weed Management in Different Cropping System, Aduthurai	21,600
92.	Scheme for Strengthening of Post-Graduate Teaching and Research in Agrl. Marketing Management, Coimbatore	48,300

93.	Scheme for the Development of Suitable Varieties of Sweet Potato and Tapioca for Ethanol Production, Coimbatore	23,300
94.	Scheme for Improvament of Forage Grasses, Legumes and Pasture Development, Aruppukottai	32,400
95.	Scheme for Improvement of Forage Grasses, Legumes and Pasture Development, Paiyur	23,200
96.	Scheme for Improvement of Forage Grasses, Legumes and Pasture Development, Erode	34,600
97.	Scheme for Research on Oil Bearing Tree Crops Like Neem, Pungam and Silvagronomical Studies on Energy Fuel Yielding Wood Lots, Aruppukottai	6,900
98.	Scheme for Research on Oil Bearing Tree Crops Like Neem, Pungam and Silvagronomical Studies on Energy Fuel Yielding Wood Lots, Mettupalayam	23,200
99.	Improvement of Existing Downy Mildew Resistant Varieties (Maize) for Yield and Resistability to Rainfed Farming System of Tamil Nadu, Coimbatore	47,200
100.	Scheme for Formulation of Improved Agro - techniques in Grapes Suitable for Dharmapuri District, Paiyur	75,700
101.	Establisment of Centre for Nematode Pests of Crop Plants, Madurai	76,500
102.	Scheme for the Improvement of Brinjal varieties for North-eastern Region of Tamil Nadu, Palur	71,100
103.	Studies on the Causes of low soil Fertility in Chingleput District, Tirur	70,800
104.	Establishment of a Seed Complex including Seed Health Testing Training Centre, Bhavanisagar	1,00,200
105.	Scheme for Agro-processing of Millet Based Food Products at Village level, Coimbatore	26,900
106.	Scheme for Strengthening of Seed Production Programme at Multi Crop Experiment Station, Pattukottai	31,300
107.	Scheme for starting of Bio-fertilizer Production and Quality Control Unit, Coimbatore	46,800
108.	Scheme for starting of Bio-fertilizer production and quality control, Madurai	43,300
109.	Scheme for Improvement of Sunflower, Tindivanam	69,500
110.	Scheme for Development of Breeders Seed of Millets, Kovilpatti	76,200
111.	Scheme for Development of Breeders Seed of Millets, Vamban	50,600
112.	Establishment of Nematology Lab, Kancheepuram	1,33,000
113.	Establishment of Nematology Lab, Trichy	1,83,900

114.	Establishment of Biological Testing Lab, Paiyur	96,400
115.	Scheme for Production of Breeders Seed in Paddy, Aduthurai	42,900
116.	Scheme for Improvement of Manja makkattai and Thalaivrichan Cholam, Vamban	53,100
117.	Scheme for Upgrading the sugarcane Experiment Station, Cuddalore	1,63,100
118.	Scheme for Strengthening of Multicrop Experiment Station, Vamban	72,000
119.	Scheme for Multiplication and Distribution of Pulses, Vamban	1,18,200
120.	Scheme for Research on Temperate Vegetables, Thadiyankudisai	13,400
121.	Strengthening of Breeder Seed Programme, Thiruvannamalai	23,000
122.	Strengthening of Breeder Seed Programme, Thiruchengodu	23,000
123.	Strengthening of Breader Seed Programme, Coonoor	23,000
124.	Strengthening of Breeder Seed Programme, Kattupakkam	20,000
125.	Scheme for Commercial Exploitation of Heterosis in Rice, Aduthurai	21,000
126.	Strengthening of Radiation Research Crop Management Studies, Coimbatore	25'000
127.	Scheme for Studies on Epidemiology and Integrated Management of Rice Plant Diseases, Coimbatore	21,000
128.	Scheme for Multiplication and Distribution of Pulses, Coimbatore	21,000

ICAR Schemes - Fully Financed

1.	Strengthening of Agricultural Entomology, Madurai	56,000
2.	Scheme for Strengthening of Post-graduate Departments - Establishment of New Departments - Madurai	45,700
3.	Scheme for influence of Climate on Ontogenic Changes in Determining Evapotranspiration and Biomas Production in Sugarcane, Cuddalore	38,100
4.	Scheme for Production of Super Elite and Elite Sunflower Seed, Bhavanisagar	4,46,800
5.	IDRC Research Project on Sesamum, Vridhachalam	1,65,900
6.	IDRC Research Project on Sesamum, Paiyur	65,800
7.	IDRC Research Project on Sesamum, Srivilliputhur	70,700
8.	Scheme for Studies on Biological Effect of Chitin Inhibitor on *Spodoptera litura* and *Heliothis armigera*, Coimbatore	30,400
9.	Scheme for Studies on Management of Pulses Pests *Heliothis armigera* and *Spodoptera litura*, Coimbatore	30,400

10.	Scheme for All India Multilocational Research on Agricultural Acarology, Coimbatore	64,000
11.	Scheme for white Tip Nematode of Rice, Nagercoil	62,800
12.	*All India Coordinated Research Project on Betelvine* Diseases, Velur	85,300
13.	Scheme on the Control of Tomato Viruse Diseases by Antivirus Principles from Non-hosts, Coimbatore	17,400
14.	Scheme for Research on Improvement of Pepper, Thadiyankudisai	42,400
15.	Scheme for Research on Improvement of Tree species in Tamil Nadu, Thadiyankudisai	29,200
16.	*Coordinated scheme on National Demonstration of Major Food* Crops, Salem	1,54,600
17.	Lab to Land Programme for Transfer of Technology to Farmers' Families, KVK, Coimbatore	3,54,000
18.	Lab to Land Programme for Transfer of Technology to Farmers' Families, KVK, Madurai	3,54,000
19.	Lab to Land Programme for Transfer of Technology to Farmers' Families, KFSC, Trichy	2,95,000
20.	Lab to Land Programme for Transfer of Technology to Farmers' Families, KVK, Pondichery	2,95,000
21.	Lab to Land Programme for Transfer of Technology to Farmers' Families, RRS, Paiyur	2,36,000
22.	Lab to Land Programme for Transfer of Technology to Farmers' Families, Vridhachalam	2,36,000
23.	*Lab to Land Programme for Transfer of Technology to* Farmers' Families, TRRI, Aduthurai	1,77,000
24.	All India Coordinated Research Project for the Rapid Improvement of Agricultural Technology Directed at Socio-economic Upliftment of Scheduled Caste and other Backward Communities, Aruppukottai	1,71,100
25.	Scheme for Breeder Seeds, National Seed Production, *Bhavanisagar*	33,600
26.	Project of Technical Cooperation between the IDRC, and ICAR New Delhi on Post-harvest Technology, Coimbatore	1,38,400
27.	Coordinated Project for Research on Chemistry of Submerged Soils under Rice Cultivation in High Rainfall Areas, Aduthurai	1,20,700
28.	Soil Organic Matter Fraction with Reference to Supply of Nutrients, Coimbatore	42,000
29.	Centre for Advanced studies in Agricultural Microbiology with FAO UNDP/ICAR Assistance, Coimbatore	5,21,100
30.	Scheme for studies on Fishery *Biology and Culturability of* Commercially Important Fresh Water Prawn *Macrobrachium idae*, Tuticorin	25,500

31.	Krishi Vigyan Kendra, Trichy	2,14,100
32.	Krishi Vigyan Kendra, Pondicherry	6,35,300
33.	All India Coordinated Rice Improvement Project, Pondicherry	1,37,700
34.	Studies on Production and Marketing of Pulses in Tamil Nadu, Coimbatore	33,600
35.	Emeritus Scientist Scheme on Investigation on the Systematic and Biology of Croconematids, Coimbatore	6,200
36.	Establishment of Man power and Placement Cell, Coimbatore	95,300
37.	Emeritus Scientist, National Pulses Research Centre, Vamban	26,200
38	Development of Hybrid Rice, Coimbatore	59,400
39.	Scheme on Role of Frogs and Toads in the Biological Control of Insects, Aduthurai	42,400
40.	Scheme for Methodology of Simultaneous Determination of Factor and Product prices, Coimbatore	51,600
41.	Scheme for Conjunctive Use of Ground Water, Coimbatore	94,400
42.	Viability and Storability of seeds, Coimbatore	30,600
43.	Lab-to-Land Programme, Thadiyankudisai	59,000
44.	Lab-to-Land Programme, Aruppukottai	59,000
45.	Biological Fixation of Nitrogen Fertilizers, Coimbatore	36,600
46.	Scheme for Nitrogen Fertilizer Efficiency under Indo - US Collaboration, Coimbatore	50,200
47.	Scheme for ORP on Integrated Nutrient Energy, Coimbatore	3,67,100
48.	Scheme for Nutritional Grey Mullet, Tuticorin	38,800
49.	Scheme for under and Unutilized plants - Winged Beans, Coimbatore	22,900
50.	Scheme for Water Technology Centre, Coimbatore	57,69,900
51.	NARP Strengthening of Regional Research Station, Paiyur	21,00,200
52.	NARP Sub - project for Establishment of Centre for Biological Research on Pulses - DSG	7,96,300
53.	Scheme for Implementation of Research Sub - project for Strengthening of RRS, Vridhachalam	27,52,200
54.	Scheme for Strengthening of RRS - Sub - Station Tindivanam	27,52,200
55.	NARP Scheme for Strengthening of RRS, Sub-Station, Vridhachalam	6,20,800
56.	NARP Scheme for Strengthening of RRS, Sub - Station Kattupakkam	6,01,000
57.	NARP Scheme for Strengthening of RRS, Sub - Station, Cuddalore	8,86,200
58.	NARP Scheme for Strengthening of RRS, Sub - Station Aruppukkottai	8,16,900

59.	NARP Scheme for Strengthening of RRS, Sub-Station, Srivilliputhur	3,00,000
60.	NARP Scheme for Strengthening of RRS, Sub-Station, Vamban	7,47,000
61.	NARP Scheme for Strengthening of RRS, Sub-Station, HRS, Thadiyankudisai	15,67,000
62.	NARP Scheme for Strengthening of RRS, Sub-Station, Thirupathisaram	13,57,000
63.	Establishment of KVK at Kattupakkam	10,42,000
64.	Establishment of KVK at Vridhachalam	10,42,000
65.	Scheme for Nutritional Status in Rural levels	23,000
66.	Emeritus Scientist - DSG, Coimbatore	13,500
67.	NARP Scheme for Implimentation of Research sub-project-Aduthurai	21,79,400
68.	NARP sub-centre-Establishment of Special Centre for Cauvery Delta Zone, Trichy	17,47,400
69.	Scheme for increasing Income and Employment through Optimal Farm Planning and Identification of Constraints, CARDS, Coimbatore	25,000
70.	Conduct of National Workshop on Status of Agricultural Management Education, CARDS	37,000
71.	Centre for Soil & Crop Management, Coimbatore	35,000
72.	Summer Institute on Biological Control of Plant Diseases, Coimbatore	35,000
73.	NARP - Strengthening of Directorate of Research (Agri), Coimbatore	1,86,900

ICAR SCHEMES - Partly Financed

1.	Integrated Scheme for Water Management and Soil Salinity Bhavanisagar	3,88,500
2.	All India Coordinated Agronomic Research Project Cropping System Research, Coimbatore	3,00,800
3.	All India Coordinated Agronomic Research Project Cropping System Research, Bhavanisagar	85,700
4.	Integrated Scheme for Water Management and Soil Salinity, Madurai	4,02,400
5.	All India Coordinated Research Project for the Improvement of Wheat, Coimbatore	50,700
6.	All India Coordinated Research Project for Dryland Agriculture Kovilpatti	5,16,100
7.	All India Coordinated Agronomic Research Project Experiment on Cultivators' Field, Cuddalore	81,200

8.	All India Coordinated Agronomic Research Project Experiment on Cultivators' Field, Villupuram	1,94,500
9.	All India Coordinated Agronomic Research Project Experiment on Cultivators' Field, Trichy	1,61,100
10.	All India Coordinated Agronomic Research Project Experiment on Cultivators' Field, Erode	1,85,600
11.	All India Coordinated Agronomic Research Project Experiment on Cultivators' Field, Pudukottai	1,84,400
12.	All India Coordinated Agronomic Research Project Model Agronomic Experiments, Thanjavur	1,28,300
13.	All India Coordinated Research Project on Oilseeds, Coimbatore	10,17,600
14.	All India Coordinated Research Project on Oilseeds, Main centre for groundnut, Vridhachalam	3,75,000
15.	All India Coordinated Research Project on Oilseeds, sub-centre for Castor Research, Tindivanam	99,400
16.	All India Coordinated Rice Improvement Project, Coimbatore	3,77,300
17.	All India Coordinated Rice Improvement Project, Aduthurai	3,10,700
18.	*All India Coordinated Rice Improvement Project, Madurai*	35,500
19.	All India Coordinated Research Project for Improvement of Millets, Coimbatore	2,37,000
20.	All India Coordinated Research Project for Improvement of Sorghum, Coimbatore	3,86,800
21.	All India Coordinated Research Project on Jute and Allied Fibres, Coimbatore	69,900
22.	All India Coordinated Cotton Improvement Project, Coimbatore	4,05,500
23.	All India Coordinated Cotton Improvement Project, Kovilpatti	1,99,400
24.	All India Coordinated Cotton Improvement Project, Srivilliputhur	3,47,950
25.	All India Coordinated Research Project for Intensification of Research on Improvement of Pulses, Coimbatore	6,36,600
26.	All India Coordinated Research Project for Intensification of Research on the Improvement of Pulses, Vamban	5,71,800
27.	All India Coordinated Research Project on Soybean, Coimbatore	66,600
28.	All India Coordinated Research Project on Forage Crops, Coimbatore	2,55,500
29.	All India Coordinated Research Project on Nematode Pests and Their control, Coimbatore	1,13,500
30.	Scheme on Coordinated Research on Biological Nitrogen fixation, Coimbatore	7,59,400

31.	All India Coordinated Research Project on Seed Borne Diseases, Coimbatore	66,100
32.	All India Coordinated Research Project on Tuber Crops (other than potato), Coimbatore	1,43,900
33.	All India Coordinated Vegetable Improvement Project (including chillies), Coimbatore	1,14,000
34.	All India Coordinated Vegetable Improvement Project (including chillies), Kovilpatti	58,900
35,	*All India Coordinated Fruit Improvement Project, Coimbatore*	3,61,100
36.	All India Coordinated Improvement Project for Medicinal and Aromatic Plants, Kodaikanal	2,55,200
37.	All India Coordinated Spices and Cashewnut Improvement Project, Coimbatore	96,500
38.	All India Coordinated Spices and Cashewnut Improvement Project, Vridhachalam	1,09,600
39.	All India Coordinated Coconut and Arecanut Improvement Project, Veppankulam	3,55,000
40.	All India Coordinated Coconut and Arecanut Improvement Project, Coimbatore	48,200
41.	*All India Coordinated Fruit Improvement Project, Periyakulam*	2,33,600
42.	All India Coordinated Fruit Improvement Project, Aruppukottai	1,07,300
43.	All India Coordinated Floriculture Improvement Project, Coimbatore	1,83,900
44.	Scheme for Research on Cardamom, Yercaud	1,32,500
45.	All India Coordinated Research Programme on Post-harvest *Technology in Horticultural Crops, Periyakualam*	3,86,600
46.	All India Coordinated Research Project on Under-utilised and Under-exploited Plants, Mettupalayam	59,500
47.	All India Coordinated Research Project on Agro - forestry, Mettupalayam	2,56,100
48.	All India Coordinated Mushroom Improvement Project, Coimbatore	2,21,800
49.	Scheme for Studies on Harvest and Post-harvest Technology Coimbatore	3,06,500
50.	Scheme for Energy Requirements in Intensive Agricultural Production, Coimbatore	3,04,500
51.	All India Coordinated Scheme for Research and Development *of Farm Implements, Machinery and Production of Prototypes* and Their Evaluation Under Different Agro-climatic conditions, Coimbatore	5,17,300

ANIMAL SCIENCE - PLAN SCHEMES

1.	Livestock Research Station, Kattupakkam	27,41,000
2.	Farmers' Training Centre, Pudukkottai	1,73,000
3.	Mecheri Sheep Research Station, Pottaneri	1,96,00
4.	Pasture Development Research Project, Pottaneri	1,31,700
5.	University Coordinated Research Project on Fodder Crops, Coimbatore	58,000
6.	University Coordinated Research Project on Fodder Crops, Sandynallah	5,000
7.	Starting of Ph. D. programme in Pharmacology, Madras	1,32,500
8.	Scheme for Establishment of Quality Control Service, Madras	1,81,900
9.	Starting of Ph. D. Programme in Obstetrics and Gynaecology Madras	24,000
10.	Department of Animal Disease Investigation and Control, Madras	2,70,000
11.	Cheiron Making it as bi-monthly journal, Madras	29,000
12.	Scheme for Establishment of Radio Isotope Laboratory and Trace Mineral Nutrition, Madras	1,12,500
13.	Poultry Research and Development Centre, Namakkal	1,37,000
14.	Poultry Research and Development Centre, Madurai	1,40,000
15.	Poultry Research and Development Centre, Rajapalayam	1,09,700
16.	Poultry Research and Development Centre, Trichy	1,63,000
17.	Poultry Research and Development Centre, Tirupur	1,35,700
18.	Poultry Research and Development Centre, Vellore	1,60,000
19.	Poultry Research and Development Centre, Pudukkottai	1,13,200
20.	Farmer's Training Centre, Kattupakkam	1,64,000
21.	Livestock Res. & Dev. Centre, Tirunelveli	1,87,500
22.	Livestock Res. & Dev. Centre, Erode	1,75,000
23.	Livestock Res. & Dev. Centre, Dharmapuri	1,86,200
24.	Livestock Res. & Dev. Centre, Nagercoil	1,70,000
25.	Scheme for Strengthening of Bio-chemistry Section for Research and Teaching of Post-graduates, Madras	45,000
26.	Scheme for Research on Tropical Bovine Theileriasis, Madras	1,17,000
27.	Directorate of Animal Health, Trichy	2,10,000
28.	Scheme for Establishment of Entomology Research Unit, Madras	79,900

29.	Scheme for Enrichment of Poor Quality Cellulosic Waste and Pelletting for Maintenance of Work Bullocks and Cows yielding less than five litres of milk, Coimbatore	62,000
30,	Scheme for enrichment of Poor Quality Cellulosic Waste and Pelletting for Maintenance of Work Bullocks and Cows yielding less than five litres of milk, Kattupakkam	41,800
31.	Scheme for the Control of Abortion in Cattle, Erode	40,000
32.	Scheme for the Control of Abortion in Cattle, Coimbatore	63,800
33.	Scheme for the Control of Abortion in Cattle, Trichy	77,000
34.	Department of Clinics, Madras	13,89,600
35.	Scheme for Starting of Ph.D. Programme in Therapeutics, Madras	1,00,000
36.	Scheme for influence of Aflotoxicosis on the Immune Response of Cattle Protected against Rinderpest, Madras	1,11,000
37.	Scheme for Starting of Ph. D. Programme in Veterinary Pathology, Madras	58,500
38.	Scheme for Starting of Ph. D. Programme in Preventive Medicine, Madras	1,17,600
39.	Scheme for Evolving Broiler Rabbit, Kattupakkam	47,000
40.	Scheme for Conducting Short Term Training Course in the Department of Meats, Madras	87,000
41.	Scheme for organisation of the Dairy Plant at the Department of Dairy Science, Madras	4,16,100
42.	Scheme for Strengthening the Department of Animal Husbandry, Madurai	39,500
43.	*Scheme for Electron microscopial and Ultra structural Studies* on Rhinosporidiasis in Nasal Polyps of Animals and Men, Madras	2,02,000
44.	Scheme for Establishment of Vaccine Res. Centre, Madras	2,44,700
45.	Scheme for Studies on Tropical Bovine Theileriasis (acarology), Madras	90,800
46.	Scheme for Karyology of Cattle and Buffalo Chromosomes-Particular Reference to Sterility and Infertility, Madras	57,600
47.	Establishment of Institute of Animal Nutrition, Kattupakkam	2,44,000
48.	Scheme for Establishment of Regional Sheep Reseerch Centre Aruppukkottai	44,600
49.	Scheme for Starting Ph. D. Programme in Veterinary Physiology, Madras	53,500
50.	Scheme for Establishment of Livestock Research and Development centre, Thanjavur	59,000
51.	Scheme for Starting M.V.Sc. Degree Course in Dairy Technology, Dairy Microbiology and Dairy Chemistry, Madras	52,000

52.	Scheme for Establishment of a Separate Unit for Research on Protozoology and Helminthology, Madras	50,100
53.	Scheme for strengthening of Radiology Section, Madras	65,300
54.	Establishment of an Unit for Histology and Histo-chemistry, Madras	69,100
55.	Strengthening of Animal Husbandry Statistics, Madras	24,600
56.	Establishment of a Breeding Unit for the Production of Austra-white Pullet Chicks, Madras	15,000
57.	Scheme for Evolving a Synthetic Mutton Breed of Sheep for Tamil Nadu, Kattupakkam	62,000
58.	Establishment of Poultry Production Training Centre, Madurai	79,900
59.	Scheme for Organisation of Dairy plant, Madras	4,16,100
60.	Second Veterinary College, Namakkal	10,00,000
61.	Scheme for Studies on Rumen Physiology, Madras	36,000
62.	Colloborative Scheme to Increase the Conception rate in Frozen Semen Techniques, Madras	50,000
63.	Strengthening of Communication Centre, Madras	50,000
64.	Scheme for Breeding Ducks for Eggs, Madras	76,000

ICAR Schemes - Animal Science

Fully Financed

1.	Scheme for Emeritus Scientist on studies on Aflotoxicosis in Laboratory Animals, Madras	6,000
2.	All India Coordinated Scheme for Strengthening Agricultural research Programmes for the Socio-economic upliftment of tribals area - Research for Buffalo Base Farming in the Sandynallah	2,60,000
3.	Scheme for Utilizing Tree Leaves as a Source of Fodder during winter in Mountain Region, Sandynallah	33,200
4.	Scheme for Evolving a Synthetic Mutton Breed of Sheep for Tamil Nadu, Pottaneri	87,800
5.	Scheme for Deep freezing and Utilisation of Ram semen, Sandynallah	75,700
6.	Scheme for Surveillance of Salmonella and E. Coli infections of Poultry and Livestock including Pet Animals and Study of contamination by salmonella of Animal Feeds and Other Products Meant for export and local Consumption, Department of Microbiology, Veterinary College, Madras	51,400

7.	Scheme for Evolving Synthetic Egg line, Madras	1,57,000
8.	Scheme for Studies on Bio-chemical Polymorphism in Poultry, Madras	43,600
9.	Scheme for Variant Light and Dark Periods on Poultry Production, Madras	59,500
10.	Scheme on Mineral Status of Plant and Animal and its Relation to the Incidence of Haematuria in Hill Cattle, Sandynallah	61,000
11.	Scheme for Evolving Broiler Rabbits, Sandynallah	1,69,000
12.	Scheme for Establishment of a New Wing of Research and Teaching in Veterinary Public Health and Epidemiology, Madras	60,000
13.	Scheme for Internship in Veterinary, Veterinary College, Madras	2,51,400
14.	Scheme on Processing of Animal wastes for Production of Sports Guts and Cat Guts and Livestock Feed Supplement	1,20,916
15.	Productive Efficiency of Khaki Campbell, Desi and their Crosses for Egg Production, Teynampet, Madras	1,18,800

Partly financed

1.	All India Coordinated Research Project on Poultry for Meat, Teynampet, Madras	8,25,200
2.	All India Coordinated Research Project on Sheep Breeding for Fine Wool, Sandynallah	8,54,900
3.	All India Coordinated Research Prolect on Sheep Breeding Field Demonstration Unit, Sandynallah	44,800
4.	All India Coordinated Research Project on Sheep for Mutton, Kattupakkam	6,51,000

Fisheries Plan

1.	Scheme for culture of Brlme shrimp Aretamia saline, Depart, ment of Fishery Biology	46,000
2.	Scheme for Pollution Monitoring Studies in Tuticorin waters.	39,500
3.	Scheme for Mariculture of Fishes, Fisheries College	38,600
4.	Scheme for Brakish water Pen Culture	35,900
5.	Scheme for ORP on Fish Culture, Killikulam	31.900
6.	Scheme for ORP on Fish Culture, TRRI, Aduthurai	26,300
7.	Starting of M.F.Sc. course, Fisheries College	90,500
8.	Scheme for Polyculture of Fin fishes and shell fishes in Brackish Water	81,300

9.	Schemes on Nutrient Chemistry and Proper Utility of Sewages, Tuticorin	10,000
10.	Scheme for Preparation of Certain Smoke Cured Fishes, Tuticorin	10,000

Government of India Schemes

1.	Comprehensive Scheme for Studying the Cost of Cultivation of Principal Crops, Coimbatore	10,81,800
2.	Establishment of Agro-Energy Centre	2,82,900
3.	Establishment of Regional Centre for Development of Biogas	1,87,800
4.	Integrated Recycling of Organic Waste.	54,400
5.	National Project on Development and Use of Fertilizer	30,000
6.	Scheme for Developing Forage Grasses, Forage Legumes and Forage Trees for Hill Areas of Palani hills of Western Ghat, Perumbarai	1,26,600
7.	Scheme for Exploitation of Microbial System Associated with Plant Species in the Eco-Development of Western Ghat Region, Kodaikanal	1,07,600
8.	Scheme for Exploitation of Microbial System Associated with Plant Species in the Eco-Development of Western Ghat Region, Sandynallah	91,600
9.	Scheme for Exploitation of Microbial System Associated with Plant Species in the Eco-Development of Western Ghat Region, Mettupalayam	1,01,600
10.	Scheme for research on Medicinal Plants and Tropical Pines, Mettupalayam	58,000
11.	Scheme for research on Medicinal Plants and Tropical Pines, Kodaikanal	72,000
12.	Scheme for research on Medicinal Plants and Tropical Pines, Sandynallah	46,000
13.	Scheme for Nutrient Potential Studies of Soils of Western Ghats and Environmental Pollution of Soils, Plants and River Water Basins, Kodaikanal	4,11,000
14.	Scheme for Impact of Industrial Pollution of the Ecology of Bhavani River and Environs, Coimbatore	54,900
15.	Scheme for Tribes and Other Communities of Western Ghats- Their Socio-cultural and Psychological Characteristics, Rehabilitation and Development in relation to Eco system Kodaikanal	80,000
16.	Flowering, Seed-set and Seed quality in Forest, Plantation, Forage and Vegetable crops as influenced by the Agro Techniques and Pollutants affecting the Ecological Balance, Kodaikanal	53,000

17.	Flowering, Seed-set and Seed quality in Forest, Plantation, Forage and Vegetable crops as influencad by the Agro Techniques and Pollutants affecting the Ecological Balance, Mettupalayam	46,000
18.	Flowering, Seed-set and Seed quality in Forest, plantation, Forage and Vegetable crops as influenced by the Agro Techniques and Pollutants affecting the Ecological Balance, Coimbatore	1,500
19.	Scheme for integrated Eco-Development Project of Western Ghat-Coimbatore	30,000
20.	Scheme for Environmental Education in the Western Ghat Region, Coimbatore	2,50,000
21.	Scheme for Development of Sugarcane, Melalathur	31,300
22.	Scheme for Development of Sngarcane, Sirugamani	35,500
23.	Scheme for Development of Sugarcane, Cuddalore	10,000
24.	Scheme for Intensive Cotton Development Programme, Kovilpatti	65,700
25.	Scheme for intensive Cotton Development Programme, Bhavanisagar	40,600
26.	Scheme for Forage Legumes and Forage trees for Hill Area of Palani hills	1,500
27.	Exploitation of Microbial degradation, Coimbatore	4,000
28.	Scheme on Survey on Identification of Location Specific Environmental Problems in Nilgiris Range of Western Ghat, Coimbatore	8,000
29.	Scheme for Study on the Effects of Seawater Intrusion and inundation on the Soil Plant Characteristics, Aduthurai	50,000
30.	Scheme for Survival and Effectiveness of Rhizobial Inoculants in Rice Fallow Pulses	46,900
31.	Scheme on Trycem D. E. E. Coimbatore	2,15,000
32.	Scheme for Standardisation of Developed Biogas Plant Components and Enriched Process Techniques for more gas output, Coimbatore	1,75,000
33.	On-farm Management Work at Cauvery Delta, Thanjavur	11,000
34.	Survival and effectiveness of Rhizobial Inoculants in Rice Fallow Pulses, Madurai	46,900

Other Agencies

1.	Scheme for Training Women in Enterprise Management to Encourage Their Participation	1,47,500
2.	Scheme for All India Coordinated Researnh Project on Weed Control, Coimbatore	1,90,000

3.	Scheme for Institution of A Chair in Agricultural Marketing Management, Cards	48,800
4.	Project on Credit for Rural Development in Southern Tamil Nadu, Madurai	1,83,000
5.	Scheme for Strengthening Teaching and Training (in coffee) for UG and PG degree course in Horticulture, Yercaud	72,300
6.	Scheme for Utilization of Coir Pith in Agricultural Farms, Coimbatore	88,000
7.	Scheme for Research on *Coleus forskholii*, Coimbatore	25,000
8.	Training T & V system-Conduct of Workshop cum Seminar cum Training Programme for T & V system - Subject Matter Specialist of the State Department	1,12,500
9.	Institution of a Professorial chair of Professor of Agronomy for undertaking Experiments on Fertilizer Use in Soil and Crop Management Studies; Coimbatore	10,000
10.	Institution of a professorial chair of Professor of Soil Science in soil Fertility and Fertilizer use, Coimbatore	1,000
11.	Scheme for Self Employment of Rural Women in Agriculture and Production of Bio-Control Agents, Coimbatore	95,900
12.	Scheme for Fate and Efficiency of urea based fertilizer in India, Coimbatore	7,39,000
13.	Survey on The Production and Utilization of Horsegram, Paiyur	30,000
14.	Study of Over Exploitation and Under Exploitation of Groundwater in Tamil Nadu, Coimbatore	98,500
15.	Project on Changing Structure of Rural Employment and Factor Market in Tamil Nadu, Coimbatore	1,55,400
16.	Collaborative Research on Growth Linkage-Effects of Green Revolution on Regional Income and Employment in Tamil Nadu, Vellore	37,700
17.	Study on the Role of Women in Rural Development, Coimbatore	78,600
18.	Programme of Awarding Fellowship to Women Students for PG Studies in Agriculture, Coimbatore	59,000

APPENDIX - II

LIST OF BOOKS / BOOKLETS PUBLISHED

ENGLISH

1. Composite Fish Culture
2. Consumers' response to Agmark
3. Crop water requirements - A guide for scheduling irrigation in Thanjavur district.
4. Cropping systems in the Tropics, Principles and Management
5. Cost reduction in production system
6. Drip irrigation for coconut
7. Permanent Manurial Experiment
8. Pest Management - in Field crops and stored products
9. Pest and Disease management-Oilseeds, Pulses, Millets and cotton
10. Production and Marketing of Pulses in Tamil Nadu
11. Protein Bio-synthesis Audio-visual Model unit
12. Yellowing in rice
13. Molluscan culture

தமிழ்

1. கோடையில் எலி ஒழிப்பு
2. தென்னைக்கு சொட்டுநீர்ப் பாசனம்
3. பருத்தியில் வெள்ளை ஈ
4. புரத உற்பத்தி - கேள் - காண் விளக்க ஏடு
5. வேளாண் கையேடு

APPENDIX - III

List of Research Papers Published

AGRICULTURE

Agricultural Biochemistry

1. Balasaraswathi, R. and Sadasivam. Sunflower seed protein profile during germination. Abstract No. A - 17 *ISPROPHI*, 1986.

2. Krishnaveni, S. and S. Sadasivam. Solubility fractions and gel electrophoresis of *Vigna mungo* grain proteins. Abstract No. A-21 *ISPROPHI*, 1986.

3. Parvathy, K. and S. Sadasivam. Changes in protein and aminoacids in *Panicum miliaceum* during germination. Abstract No. A-20 *ISPROPHI*, 1986.

4. Sadasivam, S. and B. Thayumanavan. Ureide metobolism and protein synthesis in greengram plants. Abstract No. N-16 *ISPROPHI*, 1986.

5. Theymoli Balasubramanian and S. Sadasivam. Okra seed proteins. Abstract No. N-22 *ISPROPHI*, 1986.

Agricultural Botany

1. Amirthadevarathnam, A. Study of heterosis is relation to combining ability and *per se* performance in rainfed rice. *Madras Agric. J.*, 71(9):568-72, 1984.

2. Chandrasekharan, P., C. Surendran and M. Paramathma, Correlation and path coefficient analysis in *Leucaena leucocephala* (Lam) dewit. South Indian Hort., 427-430, January, 1985.

3. Dharmalingam, V. and M. Kadambavanasundaram. Genetic Variability in cowpea (*Vigna ungiculata* (L) Walp. *Madras Agric. J.*, 71 : 640-43, 1984.

4. Ganesan, K., T. Sundaram, W. W. Manuel, and S. Palanisamy. B. G. 367-4, a promising short duration rice. *IRRN*, 10 (5) : 7, 1985.

5. Jehangir, K. S. and R. Krishnaswami. Relative efficacy of different diallel maturing systems in upland cotton. *ISCT Journal*, X (2) : 1985.

6. Manoharan, V., R. Rathinaswamy, P. Vindhiyavaraman, R. Sethupathi Ramalingam and M. Vaman Bhat, Early maturing bunch groundnut. *DOR Newsletter*, 4 (2&3) : 13, 1985.

7. Manuel, W. W. and K. Ganesan. Reaction of A.S.D. Vareties. IRRN, May, 1985.

8. Nagarajan, M. and G. Soundrapandiyan. Effect of mutagens on cold tolerance in rice. *Madras Agric. J.*, 71 (11) : 754-757, 1985.

9. Narayanan, D. and M. N. Prasad. Breeding behaviour of grain mould resistance in sorghum. *Sorghum Newsletter*, 27 : 1985.

10. Palanisamy, S. and M. N. Prasad. Variability and interrelationship between different characters in Sweet Sorghum. *Sorghum Newsletter*, 27 : 29, 1985.

11. Rangaswamy, M., R. Balasaraswathi, R. Appadurai and N. Mohamed Sheriff. Stability of five sunflower genotype over different environments. *Madras Agric. J.*, 71 (12) : 828-831, 1984.

12. Sivaram, M. R., R. Rathinaswamy and R. Appadurai. The origin and the characteristics of the groundnut mutant variety Co 2 (Mutant 3). *Mutation - Breeding Nawsletter* (Vienna), 26 : 2, 1985.

13. Sree Rangasamy, S. R., P. Chandrasekaran and C. Surendran. Fodder cholam for superior fodder production. Milcow, p. 21-24, April, 1985.

14. Sree Rangasamy, S. R., P. Chandrasekharan and C. Surendran. Fodder Maize-a high yielding nutritious forage crop. Milcow, p. 31-38, October, 1985.

15. Subramanian, M., A. P. M. Kirubakaran and V. Sivasubramanian. Performance of IR 64 at TNRRI. *IRRN*, 11 : 1, 1986.

16. Sukanya Subramaniam and M. Rathinam. Studies on combining ability for yield componenents in rice. *Madras Agric. J.*, 71 (71) : 424-430, 1984.

17. Sukanya Subramaniam and M. Rathinam. Genetic components of variation in rice. *Madras Agric. J.* 71(9) : 561-565, 1984.

18. Sukanya Subramaniam and M. Rathinam, Association of grain yield and yield attributes in the hybrids of cross between tall and semi-dwarf varieties of rice. *Madras Agric. J.*, 71(8) : 536-538, 1984.

19. Sukanya Subramaniam and M. Rathinam. Path analysis in rice. *Madras Agric. J.*, 71(8) : 541-542, 1984.

20. Sundaresan, N. and M. N. Prasad. New Cyto-Steriles in Pearl Millet through genome substitution. *Indian J. agric. sci.*, 56(3) : 160-3, 1986.

21. Vindhiyavarman, P., R. Rathinaswamy, R. Sethupathi Ramalingam and M. Vaman Bhat. Inheritance of chlorophpyll deficiency in intraspecific crosses of groundnut. *Madras Agric. J.*, 71 : 812-814, 1984.

22. Vindiyavarman, P., R. Rathinaswamy, R. Sethupathi Ramalingam and M. Vaman Bhat. An ecotype in groundnut. *DOR. News letter*, 4(2&3) 13, 1985.

23. Vivekanandan, P., J. Venkatakrishnan, K. Neelakanda Pillai, R. Swaminathan and D. S. Aaron. White Ponni rice in Tamil Nadu. *IRRN*, 11(1) 3 : 1986.

Agricultural Economics

1. Ajjan, N. "Regulated Markets : A Malady-Remedy Analysis". Rural Development Review, 4 (1&2) : 1985.

2. Chinnadurai, M. and Sundaresan, R. "Problems in Production and Marketing of Topioca in Salem District". Souvenir on Tapioca. March 16th, 1986.

3. Meenakshisundaram, V., " An Economic Analysis of Cost and Returns of Rice production in India and Tamil Nadu under Different Irrigation Systems" SLTP Report on Rice Production Technology Oct. 8-11, 1986.

4. Mani, K. "Development of Village Shandies". Rural Development Review, 4 (1&2) : 1985.

5. Natesan, V., R. Sundaresan and V. Narayan. "Size of Holdings in Pudukottai District. Kisan World, 12(2) : 41-42, 1985.

6. Prabaharan, R., C. Ramasamy and S. N. Sivaselvam, "Economics of Sheep Rearing as a Farm Enterprise". *Financing Agriculture*, Vol. XVII (1) : 21-23, 1985.

7. Ramasamy, C. "Marketing of Bhendi (*Abeamoschus esulentus*) in Coimbatore District : An Economic Analysis". *Madras Agric. J.*, 72(2) : 89-91, 1985.

8. Ramasamy, C. and V. Pugazhendhi, "An Analysis of Variations in Production and Prices of Potato". *Journal of Indian Society of Agricultural Statistics*. Vol. XXXVI, No, 2. August, 1984.

9. Srinivasan, N. "Agmark Grading : Need for consumer Education". Rural Development Review, 4 (1&2) : 1985.

10. Subramanian, S. R. and R. Santha. Women's work Participation - A Micro Analysis. Rural Development Review, 4 (1&2) : 1985.

11. Sundaresan, R. and M. Chinnadurai. "Cost Reduction Techniques in Farm Business". Kisan World, 12(12) : 49-85, 1985.

12. Sundaresan, R. "Cost Reduction Techniques in Farm Management". Vingana Sudar, 13(1) : 11-17, 1986.

13. Sundaresan, R. "Planned Utilisation of Irrigation Resources". Kisan World, 12(3) : 9-11, 1985.

14. Varadarajan, S. "Union Budget - 1985-86 - Its Implication for Rural Development". Rural Development Review, 4(1&2) : 1985.

15. Varadarajan, S. and T. Shankar. "Farm Price Structure : The Need for Parity. Indian Journal of Agricultural Economics Conference Issue XL (3) July - September 1985.

16. Varadarajan, S. and K. Mani. "Diversification on Farms". Indian Journal of Agricultural Economics, Conference Issue XL(3) July-September, 1985.

17. Varadarajan, S. and N. Srinivasan, Consumers Response to Agmark in Assesment. Rural Development Review, 4(4) : 1985.

18. Varadarajan, S. "Yield Trends of Rice in Tamil Nadu". Rural Development Review, 4(1&2) : 1985.

Agricultural Entomology

1. Abdual Kareem, A. Neem and rice pests control. *Asian Farm Chemicals*, 1 : 1985.

2. Balasubramanian, G. and M. Balasubramanian. Consumption of food and its utilisation by *Spodoptera litura* fabricius fed on eight different host plants. *Indian J. Agric. Sci.*, 55(3) : 193-200, 1985.

3. Balasubramanian, G. and S. Chelliah. Chemical control of pests of sunflower. *Pesticides*, 4 : 21-22, 1985.

4. Balasubramanian, G. and S. Chelliah. Comparison of *Heliothis armigera* moth catches in pheromone and light traps at Coimbatore, India. *International Pigeonpea Newsletter*, 4 : 48-50, 1985.

5. Chelliah, S. and Henrichs, E. A. Factors contributiog to BPA resurgence, proceedings FAD/IRRI workshop on judicious and efficient use of insecticides, *Rice Abstract*, P. 85, 1985.

6. Dhandapani, N. Need based application of pesticide on some bhendi varieties for control of fruit borer, *Earias uittella F. Madras agric. J.*, 72(2) :118-120, 1985.

7. Dhandapani, N. Trapping of *Spodoptera litura* (Fb.) moths using sex phermone. *Madras Agric. J.*, 72 (4) : 236-38, 1985.

8. Dhandapani, N., A. Abdul Kareem and S. Jayaraj. Consumption and utilization of certain cotton and chilli varieties by *Spodoptera litura* Fb. Curr. Sci., 54 (1): 22-24, 1985.

9. Dhandapani, N., A. Abdul Kareem and S. Jayaraj. Life table studies of *Spodoptera litura* F. (Noctuidae: Lepidoptera) on banana. *Ann. Entomol.*, 3 (2): 44-48, 1985.

10. Dhandapani, N., A. Abdul Kareem and S. Jayaraj. Life table studies *Spodoptera litura* F. (Noctuidae: Lepidoptera) on banana. *Ann. Entomol.*, 3 (2): 45-48, 1985.

11. Dhandapani, N., N. S. Rajmohan and A. Abdul Kareem. Plant Products as antifeedants to control insects. Pesticides, 19 (11): 53-60, 1985.

12. Dhandapani, N., A. Abdul Kareem and S. Jayaraj. Life-fecundity tables of *Spodoptera litura* (Fb.) on chilli. *Indian J. agric. Sci.*, 54 (4): 290-293, 1986.

13. Francis, A. J., K. Chendrayan, C. Doize and H. L. Quimby. Anaerobic microbial dissolution of lead oxide Abst. paper presented at the annual meeting of the American Society of Microbiology, Las Vegas Nevada. USA. P. 108, 1985.

14. Gunathilagaraj, K. and S. Chelliah. Feeding behaviour of white backed planthopper, *Sogatella furcifera* (Harvath), on resistant and susceptible rice varieties. *Crop Production*, 4 (2): 255-262, 1985.

15. Gunathilagaraj, K. and S. Chelliah. Components of resistance to the white-backed planthopper, *Sogatella furcifera* (Harvath) in some rice varieties. *Tropical Pest Management*, 31 (1) 38-46, 1985.

16. Gunathilagaraj, K. and S. Chelliah. Resistance of WBPH resistant rice accessions to major insect pests of rice. *Ann. Plant Resistance to Insects Newsl.*, 11 : 44-45, 1985.

17. Habeebullah, B., Regupathy, A., Chandramohan, N. and M. Balasubramanian. Residues of insecticides applied to control betelvine scale, (*Lepidosphes coroutus*). *South Indian Hort.*, 31 : 135-35, 1983.

18. Henrichs, E. A., H. R. Rapusas, G. S. Khush, S. Chelliah. Resistance of *Nephotettix virescens* gene sources to Asian *N. Virescens* populations. *IRRN*, 11 (1): 7-8, 1986.

19. Henrichs, E. A., H. R. Rapusas, G. Rhush, S. Chelliah. Virulence of white backed planthopper populations in South and South East Asia. Report of a collaborative project. *IRRN*, 11 (1): 12-13, 1986.

20. Joshi, R. C., E. A. Henrichs and S. Uthamasamy. A bibliography on rice thrips *Stenochetts thrips* (Babiothrips) *biformis* (Hagvall) (Thysanoptera Thripidae). *Quarterly Newsletter* Appa, XXVIII 24 : 27-31, 1986.

21. Murugesan, N., P. Velusamy and A.D. Devotta. Relative efficacy of certain dust formulation against the boll worms in cotton. *Cotton Dev. J.* January, 1985.

22. Natarajan, K and S. Chelliah. Studies on sorghum grain midge, *Contarinia sorghicola* equillet in relation to environmental influence. Tropical pest Management, 31 (4) : 276-285, 1985.

23. Natarajan, K. and S. Chelliah. Chemical control of shoot fly and stem borer of sorghum. Pesticides, 20 (1) : 23-24, 1986.

24. Parasuraman, S., S. Jayaraj, M. Gopalan and T. Kumaraswami. Attraction of *Spodoptera litura* larvae to baits. *Indian Agric. Sci.*, 55(12) : 773-774, 1985

25. Rabindra, R. J., M. Balasubramanian and S. Jayaraj. Effect of *Farinocystis triboli* on the respiration of *Tribolium castaneum* larvae. J. Invertebr. Pathol., 45 : 115-16, 1985.

26. Rajukkannu, K., A. Azeez Basha, B. Habeebullah, P. Doraisamy and M. Balasubramanian. Degradation and persistence of DDT, HCH, carbaryl and malathion in soil. J. Environ. Health, 27 (3) 237-242, 1985.

27. Regupathy, A., B. Habeebullah and M. Balasubramanian. Dissipation of insecticides applied to control *Plutella xylostella* in cauliflower. Pesticides, XXX (9) 1985.

28. Ramakrishnan, C. and P. C. Sundarababu. Stemfly and leaf miner reaction in greengram *Phaseolus aureus* Ann. Plant Resistance to insects News L., 12 : 47-48, 1986.

29. Ramakrishnan, C. and P. C. Sundrababu. Resistance in cowpea, *Vigna unguiculata* to aphid. Ann. Plant Resistance to insects News L., 12 : 47-48, 1986.

30. Sivaprakasam, N., G. Balasubramanian, S. Venkatesan and A. Narayanan. Life table and intrinsic rate of increase of *Bracon kirkpatrickii* wilkinson on *Corcyra cephalonica*. Indian J. Agric. Sci., 55 (2) : 762-64, 1985.

31. Somasundaram, L. and A. Regupathy. Toxicity of flavalerate, deltamethrin and endosulfan to target and nontarget insects of cotton ecosystem. Indian J. Pl. Port., 13 : 35-40, 1985.

32. Somasundaram, L. and A. Regupathy. Field evaluation of a new systemic pyrethroid fluvalinate against cotton pest complex. Pestology, 9 (4) : 5-16, 1985.

33. Sundarababu, P. C., S. Kuppusamy and P. V. Subbarao. Control of redgram pod borers with newer insecticides. Madras Agric. J., 71 : 242-245, 1984.

34. Suresh, S. and A. Regupathy. Persistance toxicity of systemic insecticides to the banana aphid, *Pentalonia nigronervosa* coqu. South Indian Hort., 33 : 78-82, 1985.

35. Suresh, S., C. Anil Kumar and A. Abdul Kareem. Efficacy of three synthetic pyrethroids for caseworm control. IRRN, 10 (6) 22-23, 1985.

36. Uthamasamy, S. and V. Mariappan. Occurrence of black bug in Tamil Nadu. IRRN, 10(2) : 15, 1985.

37. Uthamasamy, S., S. Suresh and A. Abdul Kareem. Insectides to control thrips and case worm in the rice nurseries. IRRN, 10(6) : 21, 1985.

38. Uthamasamy, S. Influence of leaf heaviness on the resistance of bhendi or lady's finger. *Abelmoschus esculentus* L. Awench to the leafhopper, *Amrasca devastans*. Tropical Pests management, 31(4) : 294-295, 1985.

39. Uthamasamy, S. and S. Jayaraj. Efficacy of certain newer insecticides in the control of major pests of rice. *Pesticides*, XIX 9 37-46, 1985.

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